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 PFNVQDYGEALKSYATS YSLAKRNRSQMETYGVSFEPLF PFNAEDYAKALKHYAAS FSDARRHGQQLRDYKVSFDPLF
 PMDCKEYAEALWKYTNSICQLABKHQAELEKYKVSFGPLF PFNCQDYAVVLKKYADKIYNLSMKYPQEMETYSVSFDSLEF PLQCQDYAEALTLYANEIYDQAKKHEAQLEMYKVSFDPLF PLDVNQYADSLGKYAQS:AREAQKHPEEMEMYGVSFDSLF PFDCRDYAVVLRNYADTUYNUSMKHPQEMKTYSVSFGMLP PFGCVDYAAKLQQAAQGLES PFGCVDYAAKLQQAAQGLES
 PFNCQDYAVVLKKYADKIYNTSEEHGSRLSSAQNIGLEHLE PFNSTDYGEALKGYSNRIYKLAKKHEEQLKDYKVSFG PFGVLDYANKLKSSDDNIED EYGDKMAAQDITFEFDD PFDLMEYANYLGVMRSDLQA PFNODYGNDLKYTNRLYNGAKYGTDLTNHGISSDSLD



> PFDYDSYASEGQESAKDLE

PFNYTSYALEEKKSAEDLEN $\qquad$
 PFNCNDYTSRLVESDDKL $\qquad$
DELSDKGLNL LDCTQYASKLKDFPNNVQKKLKEDRNKKKTYQIVFYLLF PFNYHSYALELQKSAEELKDRALNKV
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 PFNCSRYAETLGEYVLDLEDGYGKMMSDNGDDLVSFDQLK
 PLNVTDYSETLRSF LKAAQQDLGGLLEQHSISLAPLV PLNVSDYSEVLHSF H RAAQQEL
PMDPADYADTVNGYWVSLRD GTIGEQMADYG| DFKYMN $P$ LNVSDYSDTLRSYLQEAQSAL PLNVSDYSETLRSFLQAAENL PFNYLSYALELQRYMKDLE
PFDYLSYAYELQKSAKELEAAQQELG PLDVNEYADSLRKYAQSI AQLAQKNGALLEQHNISLEPLV PIDCRSYAVYLDENYESV MAEFGDRMRNHDIDTDKLK NVSDYSETLRSFARGQAAQDTLGPLLTQPGLSLGPLV PFNYSNYATEL PFNCQDYAVALKKHAESTYNGA PMNCSLYADALSKYVSDLET
PLDPVEYSDFVKSYFQKFKSSNERGKKNLHDNLFLGYLK
RY
PFK QDYANKLR


PFNYSSYVQELENGAVDDNKRLGMPVNLSPLHKSUEQLN

PFNFLSYVDQLKHYKDVLSSLLDG SVGSHPLT
PFNYLSYANQLQVYNNLLSNLLDK QITLHPLN PFNAVDYAETLEQF PLKVVQYAARIAKEVNALESTLANVVYAPRGSEVDDTFLK
 PFNYMSYA PLDVRRLARAIDSYGKTLNET YSDDLAKQSITLKYVF PFNYGSYATQAQVYGNAVEDALRAAKA PRNVTASPLR PFNDSDYAESLEQLYKTAEDNLKG QLNAKNISGDPLK PLHCQDYAEALRLYANELYDQAKKHEAELEKYKVSFDALF
 MSVTEYAKTLTLYFNQL ASAYEANLNARNIKLDNLR
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## QUERY

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 SA VKNFSEAASDFHKRLTDHNNPVAVRUMNDQLMLLERAF

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 SAVENFTAASRDFTERLQTLNDPLQVRTINDQLMYLERAF
 SALLDNFTGAAQHFEMRLTDVWNFWRHQAMARVYLEFSRDLD SAVSNFTRATTTFHQTLVDKSNPVAVRAVNDRLMKLEGAF SAINNFTEDASKFNKRLQS DDK
$D S \nabla A V R \square M N D Q \square M L V E R A F$
SALTNFTAAATFFEEELTDQNDPDAVRRVNDQMMQLERAF
SAI RNFTDAAQAFHSRLQDKNNPFEVRMFNDQLMQLERAF
SAVTNFTEAAADFHRRLKEVDV SAVSNGTRSALRLKDRMSDKKNPLAVVDQLMQLERGF
SAVKNFTEVAANFHDRLQHTDT
SAVKNFTEIASKFNERLQDLNNPDLLR\|INDQLMFLERAF SAVTNFSKAASDFHGRLTDLTDPIAVRIMNDQLMLLERAF

 SF LIFGWCQSEQRTHQLLSSEDHNPGEVRARLNDQLMEVERAF

 K A I SVFFA A DAABFQERAKDKKNPFAIRSLNDQLTLMERAF K SI EELKEAATDINN QRRKNRFKVREVNDRLMMAERAF

 SALDNFTESAQNFEMEVCDLNDAYAVRRFNDQMMQLERAF DAI ATFFNAANNDHERIADLTNAYETRMDNDQLMQLERAF TAVKEFETAAAALVRRISALQDPLQVRMVNDQLMLLERAF TAVEKFETAAADLGQRIKGSPDTLQVRMVNDQLMLLERAF T AVEKFAVAASALDQHVKGSPDPLQVRMFNDQLMLLERAF TAVENFTAAATDFKARLENRNDULAVRRMNDQLMYLERSF TAVEKFEAAAAALDQHI QTTPSPLQVRMLNDQLMLLERAF TAVEKFEGAATSLNQR】ATLQDPLQVRMINDQLMLLERTF K SI EELKKAAMKINSHREEINDHFKVRELNDRLMMAERAF K SUEKFKRAATKI NHWAS IWKKEHKVRELNDRLMMAERAF TATKMFEESAKALDQHRAALQDPLQVRMLNDQLMLLERAF SAVENFTVAARDFHERDQTLNKA
EVI DLFSKAANEDYNKAADLTNSFLVRGYNDQLMQLERAF
SAVGRFEQAAAALHQRDETLKDPLKVRMVNDQLMLLERAF SAVQNFSEAASDFHRR
K SI K EFRKAVAKVDSELKWRNNPLKVRDINDRLMMTERAF SAVKNFTEDTYEFNKKIQDLDNPISLRDINDQLMYDERAF HAVSQFSQASETMQEVI ADRTNPLLI RSHNDKLMQMERHM SAVKNFTRAVKDFKARLDDLNNVHLVRQYNDQLMNLERSF EATDLFAAEVASFQKRVDDRKNPFAVRCDNDQVMLMERAF S A VN
$K$ S
$K$ KSIKEFRRAVLKVDSWAQWRSCPLKVRDINDRLMMTERAF K SIEELTNAATQI DSERKADKDHLRVRELNDRLVIAERAF RAVLKVDSELQALQTWKFWSNDPLRVRDLNDRLMMTERAF K A A F K A ALQMDSEMKRNNPLKVRDLNERLMMTERAF SASSNLTTAAKAFESNVADKNDPFAVRRVNDQLMQFERAF
 TSI QEFASAAKEAWQEASDRSDDMKMRALNDRLMLAERGF TAVAKFRTAANSLSRGIQDTDTPDRDRRINDQLMFMDRAF QYSNQFTQAAADFQTKFESSTNDDEI RRLNDQVMRVERSF KAVANFRKEAEQLDKVIQSSDTPDKVRKINDQLMLMDRAF KSI EELAKAAAKI DNWASTWKDQYKVRELNDRLMMAERAF
 EAI SEFKDAAEDFSKYLEDTNDAVKVMRANDRLI QLDRAF TSLASFDVGAKQAGHDSKKLEREISRRTLNDRLMLADRAF NAVGKFRDAASNLDQVIATLKNPLKIRMINDQLLLLERAF SAVNNLTTEANAFKERLTDIDDILAVRAVNDQIVMGDRMF SAVNHFASVATVFHRRLSQLDM
TAI ASFTANANAFHATIQQSNDEELLRGWNEKLVLLERHLL KEI ENFADASDNFESTLDNTTDFMKLRLLNDQMAKLERAF SAI NNFTVAANTFSNFI KT DRQPWLRRRVNNRLMQLDKTF



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UniRef90
H2L6X2
UniRef90-H2L6X2
UniRef90 $-\mathrm{G} 7 \times 918$
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$1 \mathrm{PFNCSDYA} 10 \quad 20$
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 PFDVVSYASFLEKDLDKDES RYKSLAAANGATFEYFR

 PLDIT DYSETLHSF LQAAQEDFGDLLQQNGISLEPLV PFDITNYPKQMNDYLDNLKALEKESNVKLK LISKLE
 LNATDYALGLQKYVETVKHTKQRATQNEITSDKI WQPLD

$\qquad$
 PFDYLSYANELQLYRDGLSN


PFNYLSYAYELQKSAEHLEA E TSDKGDS LVP $\square$ FNATDYADNLQKYVDK I R P HADNLPKKV HFSFEPLE $P L N D T D Y G D T L R S F$ R PFNYLSYADQLQVYNDULSNLLEK PFNVSDYAWSLENLR VAFDKENGDKMRAK ENYDDLE PFD YL S Y A YEL QKNAKDLE DEDSDKGIRRLAPLF PLNVSDYGEALEGLYS VAAEGQVQADLAAHNI SLAPLK PLRLHDYGEVVNGSASAGAEGQVQA
$P \bar{F} N Y V Y A N E L Q L Y K N M L S N F I$
PFDLGNYAVELKAYRDDLAEFVQEAGQDFAGVDLSELN PF DLSYAKDISKYDEDATYKSAPTANADNGVNLSELN

 PFDVTNYGKQMADYLDDLKKVIAE LNATDYALGLQNYVQAVKHSARTSPVNGKDLSVGWQPLD PLNATDYAVGLKGYLDAAKEKARAKQRDLLETAVSFDNLD
 P ID TQNYAVELRAYYDDLVEYTEGAGADL PYDYDTYGKELTEYL SAARKKAEDEKVSGDDVSEAD PDNCSDYAESLEXYNTAVPAAR
 LTAAEQGFQAELVKNNLSLAPL R

 NTIDYAQTI GMYFAQI SAAYKPLLQSHGVTLDYLQ PFDLNAYAKAVAKYVADLNDYAKSASTASDRNAVDLSPLR

P IDDLPNYASELSSYLEDLTEFDASEGQEL


PFD Y S Y ALELQGSTKTLEDRALGMP V T FTPMV

 PFNYS A Y A S ELLHSNTKALETPGLDDMPR K

 P F DYSSYASVLEADVRALKGLLPE
PFDFSTYALVMETSLAGFEAKLAAL
$F N A T D Y A V G L S T Y L D Q \square R P A A E Q L P G$ LNATDYAYALRKYLDSVKDKVS PDAMNSSFNLEPLD PFDYQVYASQLQEHTNALSALVMSNSQAVNQMNFDFSPMD PFDFSVYYASQLMQEHTNALSALMMSNSQAVN

PFDMEAYGKAISGWVKDLDDFVASKNAE

$\begin{array}{rl}P \square G P D D Y W E T & L \\ F & D \\ F & \text { D S Y Y N T A E S }\end{array}$ LSAGDYAQGLKNYLADVKERSKDH LAGSSFSFHAD

 PFD D S A Y A RAMARYVDDLDVYAKAAPTASDTNTDDLSPLR
 PFD DQTYAVAVTRYVSDLEEYAKSKHVPLLGARVNMQPR


LSATEYANALA $\square$ YLD SVVKKA
FSASDYSTGLGQYLEKIKMGAKK

L S A ADYAKGLSAYDEDVKEKAMEYTA


MSEFSFHELD

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UniRef90-Q5B612 UniRef90-H3H2C0 UniRef90-C5G9X6 UniRef90-U1IOF2
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UniRefoo_AOAO24U9W6



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 QA A AFYDAAVEFDAWWKKLQLWYKVRALNTKYKTLERKF ASI QEFASAAKEANDESKKLRDQMKIRALNDQLLMLLEKKGF

 LISEEFASAAKEVDGEVKKLRLQMKRRALNDRLMLAEKGF EASDLIFAQEADTFHLFDNTWRNFNARGQHNSRMAHFETDL KADARFTSSATTFHAGLAAFVSSDALRLWNDKLVLLERHL RAVDNFDASAQEFHENLASLKSGDDLSYWNNKLMYLERHL DAI GVFERRASEREMLAVSTDDKDLI KVVNHKYRDFQRGF AALQTFSDAAAKLKQQAERKRGERLVNLVNARLRDFERGF VAVSHFDSASAAHEDNAASWWQPWKRRAVNTKYKY RERKF EAI AHFKDASDEFDASAERLVEYEAIKTTNQKYKFLERQF
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## W

EASNLFTQEAAAFHEFDDTWRNFNARGAHNDRIAHFETDLL
SSMGALKRAATKVNNERKDDQNWLKDRGLNDRLMQAERAF
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SAI LRFQSAAAGLSQRVSHLQNPLGLLMVNDQLMLLERTF
 QA!DRFTTSATTFHAQLAAFGNVDALHAWNEKLVLLERHLL SARGDFFRATSRLTTDFKNSTDRFVMKEVNDRIMKVEYYF DADEVFKKRAKALEEDAVTTNDQNLKDVVNHKYIHFQRGF RAASELQSAARQUNAEASSS KGKRRSLNDRGMLAERSF
 DAISAFHQNAVKFDAWWSRLILYFKIRFTNQKYKYDERKF GAATEVLKEAKKLQQDLYDEHARMRRRSLNDHLLLAERSF GAMKGFSAQANLFHAVVEAKNDRMRKVLNKLVSLERYL NAAAELEANTARFQSWNDVWHDATQRVKHNARMAHFDTHL AADERYKKASEALHKTDHDNERPLRVRMDNDQDMLLERAF PA ISKLRAAAAQLHQVLTDAQTLSKLRSLNDRMLLAERSF NATTEFKKAASRFDDYTADWWDWWKVRNANEKYKALERQF EAAAKFKDDASHFQEWARVWHDAVQRLAHNTRMAHFETH DAAKTFRERAARFHRWGYGWNRTVARMSYNSHMTYFETNL RSDSSLYDAAVEFDAWWKRLQLWLKVRTDNTKYK LLERKF KASDILTQEALRFHTFDASWRDFLARLEHNNRLTHFESDL EAASRLQKTADEFDAYAADLTSQRLIHEVNTKYKNGERQF DAAKVFRENAVKFHRWGHSWNEADKRMSHNSHMAYFETNL HATSELQAAATRFDTWWQWWKTVYEVRKANTKYKLLERQF TAAQELKEAAVTVADEAEELRHELKRRAFNDRLMLTERAF DAI ATFHRNAIKFDAWWSRGLYFKIRFANQKYKYIERKF VAIHDFKDAARTFDEYTAELATRYDVRKANSKYKLLERQF RAVAEFQATAKKFDAYAADLTSQFQI RVVNDKYKALERAF

UniRef90_A0A024U9W6 RA $\square$ STFEKAAHHANTE $\square T L M Q D E M R A R D M N N R L M M T E R A F$



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UniRef90 C5GBI8
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UniRefofo E9GADO
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UniRef90-Q9GLD3
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## FGATDYAVALTSYपNHAKEQANQTASAAHEDNL FSSLE

PDHITS S YQAVLQFSAQLN
LDYERYNSQLLSFVRDLNQ
PIDPERYNARLLSKYVRDLNQ
P F HPLEYAHELQKYVHQLY THSARADLKEMGLSQQWLY PDYLSYSTQLHEYATTLDTELDGGDSVHPLNASVDELS PLDFGRYSEELLAF PFDMVNYGRSLETWVGDLESWANKEAEKKNHKGVKFEGLK PFDFTSYASVMS EALATFASRLNCE QEQAVDLSALR PFDFTSYASVMS $\quad$ EALAAFASRLNCEVQEQAVDLSALR
LINYDMYNEKMLSFVRDMNQF
PYDYVTYAKQ SSYLKDAKAKSDKAG
PFDVTNYGVQMTKYLDDLKAYVAAS
PMKYEKYASELYSYALDAINSGLSSSEA
PFDFQSFANTMQMYGDEVEKLLESQKAKTEENN NFAPL F
PYNPVRYYERLLEMYNQLES EHGSALKQNNTTTALLK PFDVVAYARRLVSWVRDLETWAEQKGAKEEASKIPFKELR PDDFSRYGDVVLRH:GSLNE YSADLKARGLTLQWVY
UniRef90_B2WBV4
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UniRef90_UPI000234FD6E
UniRef90_M7B185
UniRef90_H3H2B5
UniRef90_E5AAF0
UniRef90_K3WS25
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 R A I F EF Q E S A K A F D A H A A D L E S Q F Q I R V T N A K Y K G I E R A F
 QA I A K F Y DA A VA F D A WWK KV K L Y F QI R GAN DK YK L L E R K F SA RGDFSRATAAALREDFRDLLNNKLI CRRMN DRVMMKVEYNF



 S A
A A F S K S A S SATTKK RKSAAHFDEWWQWWKKFYEVRKANQKYKVLER QF

 GA I QAF QARAK DLLEQQAI LTNNPDDLITAVNHKYRDFGAGB ASSVDYFSQSTKNFTETTMLNTD D LLTVVRQVNDRLT QLDERFF EAVLQFAKDAK LIFEKWELDWD GAAHRMSHNNRMANFETHL
 DAASKFQSDAAKFQQQFAQLDWHDAMQRTSHNAAMARFETNLL SARGDFFRATSRLTTDYKNRTNRFVMREDNDRIMKVEHNF A A VQNFS DAAYNFHSRQNDTSDPMADRMVNDQLLLLERVF NSIRALKTAATTVNNEQKA RERAF
 S A VEK K E K A A E AL D Q R Q S E L P E P L QVRMLLNDQLMLLERTG


 EAVVVEFVVGNCTDFQQRVVNNKSSSSAVRQQINDQMMQLDEAGB D A A A KL K S DA DEF E K WA QL WR MA
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 A A DVVFNKA A A A LDREEADKANDARLVDLVNAKFRDFERGF DAASKFKSDAEEFDQWAQLWHDAGQRDSHNSRLASFDTQL SA DCSFNVSANAVKKAEHNVHDQQLRKHLNADYRDFGRGF DAAATFKENAARFHEWDQIWHDA IGRMSHNTRMANFETHV DA AEVFKTNAANF QAWEQVWYSAVRRIEHNNRLAGFETNL
 TAVEKFEGAATVLDDQHDSTTQDPDQVRMLNDQLMLLERTG S A R G D F T R A T S R L T T E L N E K T N K Y I M K E L N E Q I M K V E Y H F SARGDFFRATSRLTSDYRNTRDKFVMREINDRIMKVVYHF WRTWKMDELKVREVNDRLMMAERAF
NAlSTEENSAKEFRDHAVAANDSALI TVQNHKARDFSRAF SANGDFKRAATKGTMDYSDMEDKMASRVDN DRDMKVECNF K A S DEVMEAVRRFVAWEHEWQSSRKRCEFNSKMAWFE T DEL D A ASKLQQQDSK QF QQWSDA WH DA I QRMVHNARMATFESNL


 A A AHRFETAGGT DQARQRSSSAPEA A LNNS LR QVE G A L



 SARGDYSRAAETLQRDYSDLHDPTTARFYNTRDMKVESHF
 A A DR E A LDE G GKK L L E ETSSEEFAAALR I R A F N D R L M L A A E R GF LA RGDF QRAA N A L R R D I S D K E N K V I R R A L N D R I M K V E Y D F EA I LIFGANAESTHATIASNANAATRSVWNEKLVGLLERY L DAAATVSMQAQQFSKWEMEWDRGTARIAYNDKMAAFE TA L
 NSIIKALKRAATVVNNERKA
SARGDFYRATSKLTTDYKDTADRLVMREDNDRワMRVEYAV A A VA K MLLSAAESAYSRQKSA S GDLDNAMNAKLRQVVEGDLL SAI CSFNKAVAKLQRRAHDRHDKKDEKHLNTDYRDFGRGF SAI K D L H L S TY QL T DELLN
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|  | L＇AQQGLDGRNWFKHVVFAPGLWTGYSGAPFPGLVESFEDG |
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| UniRef90 UPI000234FD6E TNREGLVGRPWYKHMI YASSDQDDWGTKAFPGI VSAIANA | TEREGLSGRPWYKHMMYGPSLYNDYGAEVYPGVDDA |
| UniRef90－M7B1 | NRPGFPKYYYSHV |
| UniRef90－E5AAFO VSQGGLPDRKFYQHLIFAPGDDTGYAPVTFPGITEAVLAG |  |
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| UniRef90－K3WS25 | LSDDGLRHRPWFKHVIFGPGFYEGYSGTAFPGปADC |
| UniRef90－UPIo 0 4405D3B ${ }^{\text {d }}$ |  |
| UniRef90－W9YAl8 $\quad$ LFPGGLDSRPWFKHVVFAPGRWTGYAGATYPGLVESFED |  |
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| IRef90－S8A | UniRef90－Q0V623 L Y PEGLDGRPWF |
| UniRef90－W2QP03 | LSDAGLPHRPWFKHMIFGPGFYEGYKGAAFPGI SDCIIVFE |
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| UniRef90 U1GPZ3 ${ }^{\text {a }}$（ DLEGLPNRTQFKHVFFAPQAWSGYDEAFFPSIRDAVDVG |  |
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| UniRet90－QOCNZO LDDRGVNRTQFKHVIFGPELWSGYDATLFPAIRDSID |  |
| UniRef90 Q9C | VSPRDSPFRHI FWGSGSH |
| LDPRGLPRNPYKKHLVLSPPELPTYVDEMFPG MDLEDEEL |  |
| UniRef90－UPI000333DE7E | LSPYVSPRESPFRHIFWGYGSHTLQA LLEENL |
| UniRef90 UPlooos3177F9 L P R AFPEKLYY |  |
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|  | DSPGVSAKESPFRHVLWASQAWSGYDESFFPALRDAL |
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| UniRef90－C5P9R1 LD 1 DLGVPNRTQFKHIIFGPQKWSGYDEAFFPAIRDAID |  |
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| UniRef90－12EX12 |  |
| I NPEGLPGRPYKRHVVFAPSAHNLYLGVSFPGLFDALYEA |  |
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RS TNTSASWKLVEHEDHRVARAVMQASAVL RRKDRSAFNETLFRNQLALATWTI QEAANAI S AKNQGHVQKELDALTAALDRASGDLKAAA GNRTRAVEFVERVSNA YVAGGVLSSC
TNSALLNATKWAAVQHEVYRSARVTRRASLVLR

 TS $\quad \mathrm{DKDWEFVHQQLDIVAIHIR}$
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## UniRef90_V9DF36 UniRef90_Q5JNK6

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 UniRef90-G2WZC1 UniRef90-UPI0002C362FC UniRef90-A7SPP2

## UniRef90-C1F3D5

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PFDMPAYADKLSEWVGDLETWARN QTGYDEKTFKVTKLR PFNFLSYSDQLQENKDULSNLL PFDFRSLSKTUNGYTTDLLSLAEQMRENTAVENI DFSKLQ PLEPANYGMEMQAWLEDLRKLVSSTNG TAAVIVEQLE YNVTGYP YHTEY ETFQUVDTQDDRGFEARELDPDLLE PFDMTAYADSLSRWVTDLETWTKSHSDRLSGNGLSLSALR PFSMVAYADALKAWVRDLDGWVMGQAGANKDSTVSLKEMD LDYEAYNGKILEFVRDMSQF RADVKGMGLSLQWLY PIHPLDYSQELQKYVHKLHSYASPHS FPTLKKSVHNLV PFDMNRYSKALSQYVLDLHKYAKKDSVPGKPLKVDLQPLY

 LDYGRYKQELQMFQNKIV PFDYAVTAETVQRY LDELLEADQSRYDKE PFDMPHYAEKI RDWTGEI QAKAAKKDAVPKELKIDLERSVK P LRMTSYAQTVLQFSAKLNAKKKSPELQSGGLSPQWVF PFNYVSYTEQLIWNYTNLLRNLVKG PFNVSYTEQLWNYTNLLRNLVKG PYDYQAYGTQLKGYIEAAKSRSK EMSAGLDFAALEE PFEMETYSSAVTKYVSDLESYSKSKNVPFDPNVVNMQPLH P LGVRDYVETLEDYYNKAE KONFQANLNSKNISMAPLK PFDPPLQAAALQDYVNALSEDAGNVGGSLVLSETDLVPLK
 FEAAEYPRVLAHHLEKLRAKYDNV ANAGQLSHDLS SDLHGYAKNLKPTSKHTRKGDSDRRIDFQPLY PDDVHDYASELSRYGGKI EKDAAKHPHWLNHLDRHSGHKLH PLDCNEYAQSLAQYSHTIEQLAMKHPQEMQMYSVKFDALF PFDGHQYALSLGRYLGDLWKWCEDNGANRDDKSLDLNAGK FNATDYAVGLGTYLDRIRPAAENLPDHVDSFDFGPLD
 PFDYQTYASQLQGHANGVFSAMMQNSTFVNGMNKFADDLS PFDVLAYASYLNHSLSLLHT KYGPDLQQNGVSLKHVR
 PFDSLSLVQEVNDHYGLVNTTLSK PAMIGDHGI TLACLQ PLDYWCYGDVL WVGQKKAHFNEYNGQLKSRGLTLQWMY PFDMVTYGSALERWVKEFVTWLDAYRKDLEKMGGGGVQWM
 P FNFTNDQVKI ATYVTEVTALAKQLPTQVELPEFDFKALN PLNYLDYANALGRHVDELERWVDGKRDKRHTNTIDWQPMK PFNYLNYTNQLRGYVDVLNNLLDG RDKRNNSVHPLT
 PYDFRDLATTVAGYSQEVKGLVKQMQQAAEARQFDFSGLD PLNYADYAVSLNRHLDDLKRWVDEKREKREDANDDWKPMK PWDLPNAGRVLRTHYEDLNETLAGDYPDL HGDDLSPDG PFNYVSYAQLLEDNILSLSEMMSLG KSRGVNFFPLD PFKAEDYASALKDYVKKVENSSFENDPSDQKLKHSHRSLR PTNVTYYSNVLFDDFDRISKITARDFDAKADAGGLAQLQ PLDFGCYGDVI DKHOGRLNEFSG DGKARGLTLQWIY PLHPEDYTAALSAYVDRLHDYDVPSSYKFKHLSKAVHKLK LRPSNYADHMSSYYNIIHSLIAKSSQDLDTSNLDF PLSPLSYAEKLNQMSKLLHE NKGNVLKEHGIQLNDLN PFDVKNFAAFVNS QVVATESEFGTLLADNNUSLEYLK PFDYETYATDLMVPVKLLQNSGSESKDARE VKALD MDVMKYYKVVRSYVYK NGRVKDMQPQLLPKSLTVQWLI PFDMISYASSLSTWTDKLELWADEQGAKKEKKPFSLAALK PFDYEDYGQEI EAY I EYTKQRAAESFPEGGPKFDELT PFNYTEYAYAISTYपPQVQQLATD


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UniRef90_-M2T9Y4 UniRef90-E9CAK1 UniRef90-UPIO0035A0F3F UniRef90_G2R103 UniRef90-T5AJA6 UniRef90-UPIOOO44390D9 UniRef90-I1C9L0
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UniRef90 UPIOOO4627908 UniRef90_U7PY27 UniRef90-M2QXV2 UniRef90-UPIO003991EA2 UniRef90-UPIO0046A1376 UniRef90 W7HSK5 UniRef90-A0A059A226 UniRef90_RoJK69 UniRef90-UPI0004623163 UniRef90 UPIOOO47CB50E UniRef90-G1XUA5 UniRef90-E3QTU5 UniRef90_V5HL57 UniRef90-D8R6X3 UniRefigo-GOSF10 UniRef90-G7E9C4 UniRef90-F6R440 UniRef90-11BV89 UniRef90-A7SMR7 UniRef90-F6WKT2 UniRef90-H2ZPF9 UniRef90_UPIO003B73D19 UniRef90 UPIOOO4439302 UniRef90-GOS708 UniRef90-Q11NT3 UniRef90-E9COF8 UniRef90-AOAO10QB04


N V N NAKDNLKAFALWEMAWESTDKRLQFNNHMADFETA L


80 EATD F LLSQQS QQFHNFDQSWRDFVARIQHNERLAQFETYGL
 FARGDFQRAVTALRRDDANSDNRVIDRALNDRMMKVEYDF
 TS $D Q Q E L A S A A K E V E Y E V V K Q L R E A E R R R A D L N D R L M L A E R G F$

 QARGDFTRATTALT QDVKDLDDRDASRLLLNDRLLMKVEYQF TAVEKFEKAAAALNQRISELLPNPDQVRMLNDQLMLLERAF NAIVVHYGDSAALEHRRLTETASHTQLEWWNRRLLLLGERQL

 NATNVFVDRAVKFDTADTHKS DLLARRRVN DQLMQQDRAF ADAKQFTTAAQAVLERQQS ESGNLSTFNAQLRQVEEDF NAAVAFDTYAMELJNHLPWWMYWFKI RAANDKYKYLERQF ASAERFAVAGQQTHE LQDHPSGDLLR DNTLLRQTEAAL EATGKVVSAVAEFEGWERSWEAERQREEYNSRMGMFETDL
DA ADEVGMAVRRFVKWETEWENKDMRAEYNARMGRFDSDLL A A I K DLT S A AK DA Q NEAKRLREQEKDHDLN DR LMLDAERGF NALVALDKTAQHLQDARKPQLDAAQLEVLNKALYQAAEQQL



 DATNSLLNTEVAKFHQWEGNWNSA DRRRMAHNTHMGYFETNGL A A A HRFESAGTADRSRQVAP PADTATLLNTALRSAESALL
 SAMGDFERAVDSLKRDLSDLSDRLI CRASNDRIMKVVEVE R A A R M L E A TADA F R A ER D R I A H R S A L V T I N D HLLHRA E Q GF
 A S IQ ELLA SAAEEAE GEAKKLLREEEKKRALLNDRLMLAAERGF
 SARGDFSRAAASLTKEFSDLENALILRSLNDRIMKVEHGM D A AKVFRENAA LFRRWGHNWNSAMAI RRMSHHMTYFETHL S A V E R Y K K A C E T L E E T D
 A A ANEVT GAVGTTEQWESRWENSVLRAADNNRMAQFETDLL K A VE QFK DAASRLDAVSP LRVAPGGLQQVNKA Y LVYLER QF RAAKRFRQSADEFRKWLELWNRTVTRLNHNNQMSDFETHL A A A RHFEHRKVGLRQK LVRLAEKYRRRALNKRLQTFEQGL
 RAI A ELLREAAAR LDDENLDWWLWWKKVRLYNDKYKGIIERKF
 G A A M Q V LIK E A E K L Q D DVVS G Y S L M R R R R L L
 SSVAKFAEATTS LDELLARGSRSQFGVAEINKRYREIDEKS F VAAKGFEKNKAFLRKKLVHLAKKVQIRRVNQKLQTFEQGF NAVYRLWENAQEFQRRVNNTKSALDVRRINDQMMLLSRAF SARRGDYARAAEK LRRKDIHTSHNERLLDRMFNDVRMRVVEFYF SARGDFNRATQALTLDVTDLTNTVACRALNDRIMKVVYHF FAAQVVVNAMRDFERWDLKWESNQQRAEYVSRMARFETDL D A DA EFEAQAARVAETAVGFQDPVMLGVVNAKFRDFSRGF


 D AVEGFVVKAARVVFSAAAVASNNKTVLLKSLNGKARDFGRGF K S I K NVNTASSALDHRRQLFWAAWHVRRANEKLIGFERGF A A I GK L K K A A D DL K A A E D S A G D A K K A ET DN LQL A MA E HK F
 SAVQNFSAAAFAFHLRQSDTSDPMAGRRVNDQLLLLERAF F AV D QLRE LLASK I PSFTAPRSKNDULDMGERCF HS L A HFTHTAESLDHQAAHWWNFPARHKDNRKYKLLLERSF NAVKALSRATTSSFSKRASKLCSSRQARRVNSQLRTFESGF
 KATRRENRRLNRLIDKRLDEYNSLHRDIEKANRRLTYFERGF EADNKFFKAAIRRFDARIDRSNDTLDRIRVTNDQUVQVEKAF AI K I F R S QALEAEALAQQTGDSALLNVVNKKYRDFQRGF YAIR QFKNAAHQLNQKITLTSDQTEI QLI NDRLYKDDRGF
 A LLT E WQQAAS LLLNRELTDSRSFSEISSEI NRRLLYQLERRKL
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S SG
Q $\square Q Q$


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 D AVARLKEAAKN
N S MM D L E A T IAA K F NA DK L N S L S DK QL E A LDN K QL MHS E L A L



D A VS A FEAACKHDDK QAVAALNDNVLLGGVVNTKFRQBSRGF SASGSYSRAARSLES D IQQLDED LQMCRLI NDRDMTVVENG


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 $K T L V Q F Q Q A A L D F H E Q M N K N N L L L A L L Q E N D R L M Q L E R A F$ AVVTEANGDAADFKASLKKLQLWWNGQATNSKYKNIIERAF Q GL E D WK K DGNE WNVWV HTVNNSDHRWTWNKK LMNIMMRRQ A ALLKSLDGASVK $\square$ AT TISNNTNDSNKSRKLNQALFQAEK QL EAAKK L KK SA QAFDDAYGKRASA GQQQQVNE LMGRME QSLL


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 R A R G LDD E RAA H K L E D GLD W WN V V A K I RL WIT Q Y K H M E R H F GSEDEFK ES L LK KI E E GI P WWNII ER I R K L N K R Y K L L E R S F D GRNR WK Q IA GQWQS WIK IWENSVVRWTWNKK LCNI GRRQ SALGS F S R A A K K LTT TE ESDLLE EVVECRDINNRIMGVERN F A A I S SFSSASAS ELRRSQA LAATNDTAALLTVQNHKARDFSRGF KALVQFEQAASSFHDNMNKNN LLLAALQEYNDRLVQLERAF AA AL KFKGDAERYKSWGSYWRNFI SRQNYNNRASNFE TAL

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| UniRef90-S3C858 | A A GDWGRANQTVAKLAK I FEHAA |
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| UniRef90_F4P498 | A HNETRVLNAI AVAS HQI QQAAEMLS P |
| UniRef90-E9ELZ2 | - G L K WA GlI D R CVNKAAES |
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| UniRef90-W5LC03 | KE GSASADLDLLKNQFALTT WTI QSCANAL |
| UniRef90-Q0TXT6 | KNQT L AQSWVKKTADAII LVAASVL |
| UniRef90_V5HK08 | KRD NHSPGWNQVRESLSYVVHALRSAANVLNS |
| UniRef90-L8G547 | D WKAAETAVGTAARLLTMASEQLGE |
| UniRef90_L2FGV8 | D WA LAS S L V DKTA QLLQNATAMLQ |
| UniRef90_UPI000360ACC9 | DTAT AVRWLTLLTKSLR DAART |
| UniRef90_G2QLZ2 | NAT LAA QLTVDRVAGULKQAGDN |
| UniRef90-M7SJY7 | GSGDDETAAEWVTKSANALLRAAEIL |
| UniRef90-Q5MPX2 | RLEPH RFDEARFRKQLALFTWTLQGAANAL S |
| UniRef90_N4TZ69 |  |
| UniRef90-M0SV48 | RKYAGEEEQLG DQHEI W |
| UniRef90-A0A016PIQ3 | DK GNFTLAQEWVGKTARGIVLAAKIL |
| UniRef90-I2FYW1 | GS DGLEGEA |
| UniRef90_UPI0003179E6D | EAGl A R AL N Y Y DRL NAAT |
| UniRef90_G8ZMY5 | D WQRAQEELDLVAKALESATDFLEETT |
| UniRef90_A7RXU2 | DQATANAED VKRQI SSVVYGIRSAITILS |
| UniRef90_W2RR11 |  |

UniRef90_W6ZQZ2 UniRef90 G2PLV7 UniRef90-B2W2Y8 UniRef90_M1WE01 UniRef90_I1C0S4 UniRef90_C4R093 UniRef90_L2FTU0 UniRef90-H2RX68 UniRef90-N1JAU0 UniRef90-B9EZL4 UniRef90_M7SGY7 UniRef90 I2GYK6 UniRef90-UPI0004560284 UniRef90_E9PII9 UniRef90_UPI0003AFE786 UniRef90-UPI00036EF828 UniRef90-L1J998 UniRef90-H2SBL8
UniRef90 I3JH27 UniRef90-H3EYU7 UniRef90-Q2H1M9 UniRef90-F9XJF6 UniRef90-E6QJU6 UniRef90-C5DMW1
UniRef90- J5PIF5 UniRef90-W1QGN4 UniRef90_UPIO000E476C9 UniRef90_Q1IMS6 UniRef90_Q6CQJ7 UniRef90_M5FQ71 UniRef90_-Q0UIQ8 UniRef90-A0A023NSC5 UniRef90-UPIOO026583FE UniRef90-T1JDS1 UniRef90-UPI0003AFE354 UniRef90 F4C1E6 UniRef90-G8JNN5 UniRef90-H2ZEI5 UniRef90 R0K2W8 UniRef90-UPI000359B8AD UniRef90-S6EDE6 UniRef90_M4CS99 UniRef90_WPRRI7
UniRef90_UPIO003AD7122 UniRef90-K3WG60 UniRef90-B2WF23 UniRef90_G0VB77 UniRef90-UPI0004622C2C UniRef90-H3CR12 UniRef90-JODK01 UniRef90_UPI0003EBC62C UniRef90_V9K8B3 UniRef90_C5FDC6
UniRef90 R1E8W1 UniRef90_UPI00026596A1 UniRef90-UPI00035A1BF6 UniRef90-C0JAM1 UniRef90-WOTCKO UniRef90-A5DCE8 UniRef90 S2D2T8 UniRef90_A7TKM0 UniRef90-G8YEZ8 UniRef90_C1A4P5 UniRef90_G0J5M7 UniRef90_Q6BLG3 UniRef90_K5V932 UniRef90 UPI0003B35A74 UniRef90_UPI0002657392 UniRef90_UPI00036CE75E UniRef90_F7F9Y2 UniRef90-M2SVT1 UniRef90-K1LXP6 UniRef90_UPI00045EA5CF UniRef90_H2MDF5 UniRef90_UPIO000D9A6BF UniRef90_Q1IMTO UniRef90-F4RSP2 UniRef90_R7SKF0 UniRef90_C4R5N2 UniRef90-M5CH88 UniRef90-W5MJ70 UniRef90_UPI00042B07BB UniRef90_G4WVR3 UniRef90_S2JK69 UniRef90_U5QL55
UniRef90_C7MUB3 UniRef90-A8QD34 UniRef90_UPI00047CAFB4 UniRef90_W6MSH6


 PLHPADYAADLSKYVDNLSTYTSSLNYLPDAVDKLERTAT

 PFRATDYA $\square A L Q K F I S K A E A R L D S \square I A E L L D L K S S F \square E L G H$

PFDMGSYALELDERYAAELEGWVADFEKEQEQEKLDVNKLR PFDDITNYANTLSE LLLHDLEK QYS G

| $R$ | $L$ | $F$ | $D$ | $S$ | $V$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $D$ | $L$ | $R$ | $R$ | $V$ | $R$ | $P \square D V K A$ Y A A K L E A Y L D DV D K VA R D A G V L G G R V DV D LR R V R

MDLKK Y N QLIR S HVVQ I N GKVK TVQP QLLPKALTVRWLI $P$ LEFGHFVTTVTGYVGEI EQEAAKSGRNLRFDNI QL QAL E
 $P$ L N CS D Y A E S L E D Y L K T A V S L LDVNRYSKTLTKAVAGVYKRIRLLPQVVVKDLSPSWLN
 NYDTY


 M K A S D Y A A E I Q Q R L Y E E K V E S S K G G K L NVVD Y A T K L V E Y L R E L K N F TVVPLDE GL E L N K A NF N H L N P F DFGAYAGKVREFVKE
$\qquad$ EQEKPDA
$P \square N T T$ Q Y A A E I S WY LQQ K V EA $\square$ A VA
PLK IDDHYAHHLQEE GQKLLDWTEEQAVAGYSFEFDFSAB R PLRFNDFSDTMDRYMGQLVKLVDNTRKDTEQQDIKLQPLV
 $P$ F D V V D Q L G A V L MDLK K Y N QLI R S HVVQI NKTVQRLQPQLLPKTLTGQWLV P F N
$P$ S P NDYSAK LK SMFQQFNE
 $P$ MRAE
 PFSVVVKYVEVLDESLQELLQTNYPGH
PFDYISYAEQLHAHRDALSKLLVGKA

 DLITKYDKVI RSAVSQINMKVKEINLDGPVAD
 $P$ LD Y R RYTDELVNVAMKI

DEYNEELLNNYKLDDAMWFF
 $P$ F D $\square P \mathrm{P}$ N T T Q L $P$ VKAT DYADQDSA DFATFQRAQGDFFRTNHIRLDALS $P M N D T H Y G T M M R A G L A G D Q K N \square D S V L G A N E T$
$L N Y D M Y N E E I L D E G V R D M N Q F \quad R R D V K E M G L I V S B A V$





 PARYSDLAATVARYVAEVKKLADTQREKDKAREIDFAALE PFNLLE YALTMMQDFSA SADRQYNULDF
$P Y D Y Q L Y G K E I V G Y L E A A Q K R A S E$
PFDCRDYAVVL RKYADKDYN $\square$ S MK HP QEMKTYSVSB

 | $P$ | $Y$ | $Q$ | $T$ | $R$ | $Y$ | $A$ | $K$ | $D$ | $L$ | $T$ | $D$ | $F$ | $D$ | $N$ | $A$ | $E$ | $R$ | $Q$ | $V$ | $K$ | $G$ | $F$ | $H$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $D$ | $T$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $P$ | $Y$ | $D$ | $V$ | $P$ | $R$ | $Y$ | $A$ | $Q$ | $D$ | $L$ | $K$ | $G H$ | $F$ | $D$ | $Q$ | $A$ | $V$ | $K$ | $N$ | $V$ | $K$ | $E$ | $I$ | $A$ |
| $P$ | $E$ | $F$ | $E$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


$P \square D \square K$ A Y G K A L K G Y $\square \mathrm{NH} \mathrm{H} \quad \mathrm{P}$ T
LTLLQ WV Y

D ME MY H K K LA H H GKEPK T K LK H L K K Q VE S L I I D F A Q T Y $P$ LSVVTQMAKGVVK E E DEKYFVELQQEPMSERGVPVSTVY P I D T T Q Y A L E L D D Y L D K VVVK L L PA L P GA D R Y K S ETT TA K L N P L DVEKY S L F L R T MVV S R I V $P L N Y L S Y A K Q L Q E H K D V L S S F V D G$

SMSDTP L D

$L A T K H N V E S T T R S P S S E F C F$
$P L V Y S D Y A R E V V R H L R E V D D \quad A Q V G D P V V D L G P A Y$


## UniRef90_W6ZQZ2 UniRef90_G2PLV7 UniRef90-B2W2Y8 UniRef90_M1WE01 UniRef90 I1C0S4 UniRef90_C4R093 UniRef90-L2FTU0 UniRef90_H2RX68 UniRef90_N1JAU0 UniRef90_B9EZL4 UniRef90-M7SGY7 UniRef90-I2GYK6 UniRef90_UPI0004560284

 UniRef90_E9PII9 UniRef90_UPI0003AFE786 UniRef90_UPI00036EF828 UniRef90_L1J998 UniRef90-H2SBL8 UniRef90 I3JH27 UniRef90_H3EYU7 UniRef90-Q2H1M9 UniRef90_F9XJF6 UniRef90_E6QJU6 UniRef90_C5DMW1UniRef90_J5PIF5 UniRef90_W1QGN4 UniRef90_UPI0000E476C9 UniRef90_Q1IMS6 UniRef90_Q6CQJ7 UniRef90_M5FQ71 UniRef90_Q0UIQ8 UniRef90-A0A023NSC5 UniRef90_UPI00026583FE UniRef90_T1JDS1 UniRef90_UPI0003AFE354
UniRef90_F4C1E6 UniRef90_G8JNN5 UniRef90_H2ZEI5 UniRef90_R0K2W8 UniRef90_UPI000359B8AD UniRef90_S6EDE6 UniRef90-M4CS99 UniRef90_WORRT7 UniRef90_UPI0003AD7122 UniRef90-K3WG60 UniRef90-B2WF23 UniRef90_GovB77
UniRef90_E2L7M5 UniRef90_UPI0004622C2C UniRef90_H3CR12 UniRef90_J0DK01 UniRef90_UPI0003EBC62C UniRef90_V9K8B3 UniRef90_C5FDC6
UniRef90 R1E8W1 UniRef90_UPI00026596A1 UniRef90_UPI00035A1BF6 UniRef90_C0JAM1 UniRef90-W0TCK0 UniRef90_A5DCE8 UniRef90_S2D2T8 UniRef90_A7TKM0
UniRef90 G8YEZ8 UniRef90_C1A4P5 UniRef90_G0J5M7 UniRef90_Q6BLG3 UniRef90_K5V932 UniRef90_UPI0003B35A74 UniRef90_UPIO002657392
UniRef90_UPIO0036CE75E UniRef90_F7F9Y2 UniRef90_M2SVT1 UniRef90_K1LXP6 UniRef90_UPI00045EA5CF UniRef90_H2MDF5 UniRef90_UPI0000D9A6BF UniRef90_Q1IMT0 UniRef90_F4RSP2 UniRef90_R7SKF0 UniRef90-C4R5N2 UniRef90-T1J5S6 UniRef90_W5MJ70 UniRef90_UPI00042B07BB UniRef90_G4WVR3 UniRef90_S2JK69 UniRef90_U5QL55
UniRef90_C7MUB3 UniRef90-A8QD34 UniRef90_UPI00047CAFB4 UniRef90_W6MSH6

RAII D YF DERTMWFH GLLARAFKAEDAFKP ${ }^{50}{ }^{70}$ N N NARD $\square$ GRMF $N V V A D L K K S \square A T F S K A D V L A L S S A K K A Q L N Q E L M S M E Q V L$
 RSLSH LREKSVVHLDERAAWWWNWATVAHVNVQYKF LEERQF RFERRLERLA GRLAKDDVPAHLIQRLEKANKRLTYFERGF

 HTVHRLN NSARKWWK WL H K R I L N Y R R V K K K V N N K Y K K Y L D R A F

 $M \operatorname{N}$

 SAVANFRKAAT QMDQMI HSSDLLANE
RARGSFQRAASNDYNDITNNDDKEACRDLDNRDMKVEHSLL K ASEKF LYRAQHESTHINERDMMTERCMRFDRSQRTERCF
 SAIDDTFREQADSLTADAVAARDTDLITAAQNKKYQSFHRRF NGSKALTEAAARKYEVEAKGDLDAAGGDAVNHQLMQTERAY KRAASFDARAEELQALLWDEPMPWWKRDALNYKLRFLERMF

WK K $\square G N E W A S W T$ Q G WENS $\square H$ R WT WN K K L D A A A SF DEEAVVELQTKYDNWDSQWKVVKTNHKLKYFERKF D A DQ R F VIK A A QDFQK DDP PA QDQTLL REVN DRVVMSVVERA F K ALLDEFETEGQ LLKKLLAS GKLDA EQVQEVNRAIMQVERNW S SADYFDE Y LTTDL NK QWEDKNSHFQQVGVNFK L F Y L E K R N F








 HAAARYERAYSRFAERGASATDPNGLAAINARLVQAERALL A QAKA WQRAAEA LQARADAKGDTAAFRRLNDKMMQTERDLL S S DA AFEKAAALA V A QEMHDMSD HMRVREMNTRLLDMTE KA F D S L S M F K K KA EA F GR WE Q S WY N Q MQR
 RSSIVR LQQSASAA LDAEKDEAGRKLQQVQSANA KLVAFERGF

 SAKGDYYRAA QALEDETK DLLTNVLLTTRSHNNRIMRVVEN F

 S S I E D F T K A A E DFQ K Q DR N N M T E F EVVLE DN D KLL I R L S R A F SARGDFSRATS K LTAD YKNRTNRFVMREINDRRIMRVVEHF K I DEEFDEAATTFDTY LT D L S RHFQAVHANFKLRYL ERAF NATQQLDSESHE DQNFWQR K LUH Q Q K H HNALLQYFERNF EADKSLSSSAENLESK IDQTSMDSKKAQSVNKELMALEKS F R GMLLWK S $\quad$ LGK K WT S WMK A WDNSVHRWTWNKKGLSNGGRRQQ NATLDFDAKSEHLQSWWQRDKLHFQDKKHNKLAQYFERGF
 HASHRLDKEKATAEKRFKE WWQRKRVQKANSKLVVAFEKGF

 A A AKR LAAAGTA $\square$ RAT QAAP PSDPTALNQSLLRAAA EA L

 EALVVRLERSSAADYQQKLN QAMDEAK QDQIN Q GLI GLLEKS W RARGSFQRAAER\SSAVQDLTDPEACR@LNDRIVMKVEHCLL
 K A V D N L C L A D

P K K I R R Y Y N K L L K K S F E S S G K
 EAVHNFTQVAEEWQAEVDNRQNP DAMRMANDQMMAVERAF E YI D R SEENARRALYQAFDSSDHKDTRLI NEKLSNFERGF


 D A AR GWQVAA QRLENAARNA RGDERDTLNEALLAQERAL


 UniRef90_UPI0004560284 UniRef90-E9PII9 UniRef90 UPI0003AFE786 UniRef90- UPI00036EF828 UniRef90-L1J998 UniRef90_H2SBL8
UniRef90 I3JH27 UniRef90-H3EYU7 UniRef90-Q2H1M9 UniRef90-F9XJF6 UniRef90-E6QJU6 UniRef90-C5DMW1
UniRef90 J5PIF5 UniRef90-W1QGN4 UniRef90_UPI0000E476C9 UniRef90_Q1IMS6 UniRef90_Q6CQJ7 UniRef90_M5FQ71 UniRef90-Q0UIQ8 UniRet90 A0A023NSC5 UniRef90 UPIO0026583FE UniRef90-T1JDS1 UniRef90_UPIO003AFE354 UniRef90 F4C1E6 UniRef90-G8JNN5 UniRef90-H2ZEI5 UniRef90 R0K2W8 UniRef90-UPI000359B8AD UniRef90-S6EDE6 UniRef90 M4CS99 UniRef90 WORRT7 UniRef90-UPIO003AD7122 UniRef90-K3WG60 UniRef90_B2WF23 UniRef90 G0VB77 UniRef90-E2L7M5 UniRef90_UPI0004622C2C UniRef90 H3CR12 UniRef90-J0DK01 UniRef90_UPI0003EBC62C UniRef90_V9K8B3 UniRef90_C5FDC6 UniRef90-R1E8W1 UniRef90-UPI00026596A1 UniRef90 UPI00035A1BF6 UniRef90 COJAM1 UniRef90-WOTCK0 UniRef90 A5DCE8 UniRef90 S2D2T8 UniRef90_A7TKM0 UniRef90_G8YEZ8 UniRef90 С 1 1A4P5 UniRef90-G0J5M7 UniRef90_Q6BLG3 UniRef90 K5V932 UniRef90 UPI0003B35A74 UniRef90_UPI0002657392 UniRef90_UPI00036CE75E
UniRet90 F7F9Y2
UniRef90_M2SVT1
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D
130
140 FALVIESLRMTIDTVEQASMLLKK QQEWKEAQEQI GVLATTLKN
GKGDEGAAK LWVEKSAAAVLRAAE $\square \square R$
 KDAESAQQQLEDDAKSLL
D T K G A DEWI GKIVEA EKVTKS L
RSN NPEADADLDRNQFALATWTIQGCANSLA
ARDWTNACRWGE! I QKSMQAAHKNLQ
$N K L N T T E S W Q L L Q H E D Y R A A R A V S K A S A V L D$ NENDFEKAQRQLDDAGESLQSSAA DGGRGAQHEADRLAKHLEAMARRLQR
RDTASGSEAWAEVQRQLS IVVTALEGAAATLRPVA
T TANPDANAEQFRNQFAQATWTIQTCANSLA
D WGLLAMEESLK
D A K
$\square A Q E Q A T R C A G V V K H A S S V L$
ESPGQPS A WGKVHYHLSVLSQAINSAADMLVEV
AS IIAETTDMDELRTQLALATWNLQGCANAM
VANSDKKTSGRAVAEQISIIYHAVHCATNTLKP
DS GNVTEAQLTVD GVAA LLTMAAVNLEK
TS GNLKEAQKQI NIAGNLISSAQSFIDETA
K N LK K AAMEWVEITAGVIVAAGEVLK
K WTVADKATVD VGQVLDKEATTVAATELLKQ DPVA FGKWLRIIGRTI K ND WNRAQEQVDLVGN【LQSAALFVEE
D
KWTNS WDLVQPALSGTDARDEAAVHLLT AKDWATAKQQAA I LERAVRNNTQLLHEA K DVKDF $\square \mathrm{H}$ WNKIFLHTI KRLAH
T $\square$ EHDSELAKSEAARLVLLI NGAVERLE KD WDLAAKA $\square$ KMTADLLNRAGDAL SRRWDEANRYAAVTAKTL DGYREQLLDKLT
RRNPRSSALHSVREHLSVALNALRKATDLLN ENDDEPDEHWDEINDYLSDLLVSVVRQATRFLEP LKSASPEANAELFRNKLAQATWTI QACANSLA HYQEF E EQLQLLIGTI RKLK TALLDR
QHSTGT
TEKNWAQAQDQI NLI GKI LASSAE
TDMTHGPEQDEQLKEQI SVTALKKVQSAADSLYDDG
DSE WERAQGELDVVAQVLQSAADFLEE
DHDVRSARWA
NPIT

KDWDAAAKGI KKTADILTWAAERL
TDWSKAQWELDEVAAALNFASDMFK
K DLLTAAKYEVKR LVKLLD KLA K
GNATLAELDASRVSALLDKLTETDK
QTN SPEADADLFRNQFALATWTI QGCANSLA NKAGSDAERVMHARQQDSVIQHAI QCADSMLND KSASPEANAELFRNQLAQATWTI QACANSLA

RKRP $\square S P A L S Y V R E N L S L V L N A L R S A T G \| L D K$ NLGSDPSEERVQLSRELVILVVAVKRARDIL KLRRENNSAFNELRNQLALVAWTIQGAANALS E
LKSSEKLEEWDE RYAAAI QDLTKKME EDWDEAQRQTNLVGQVLKDSAK EDFGRFVKWLGVVSRAFKR
TEAETNAEDADLVKR FDAASAAMLRARTALTTA NSKTENLDHWDEV
E KNVTRARHEVKRVQHLLHKMADTIE

QRRFGDAVAYVAKTAAVLDAYAGRLDAA


ATKDWKKAAEA $\square$ KMTADVLNRAGERD
K S T DR T T E WDE
$\square N R T E K L D E W D E R Y A A A T L A S K \prod E N \square A E M \square$
AS $\square$ AA SADMEE LRTQLAL AT WNLQS CSNTM
TPGATSSAVFQEFRRQLALLTWTLQGAANA LS
KKWAQADAGVPAAAKAI EDEAKLVDSAAEAVEKLA
K N S S LTATDELNRVVKVI D

KNKKEENKFWQEVHRHVSDLLIVVHQAADILR

RENSAN FSMDEYKNWFALATWTLQGCANGLS DGQA E DRHE $\square$ W
RRWADANRYAKLTADALNTYSDRLDKAT
GAKDYAQTRHAEERAAWAI RQESKILK
ERQWQEARTQLPLLSATVEGVAAAGDRAS
$D \vee A T A T K Y R D L L I E S M E Q A T E V A H R A T$

UniRef90 H2VM97
UniRef90- H2T118 UniRef90_UPI00037FF91E UniRef90_J6ESL3 UniRef90 M2RR85 UniRef90-G3AVQ1 UniRet90-BgWJP3 UniRef90 U1YAM8 UniRef90-UPIO00455E752 UniRef90-UPI0003F105C7 UniRef90-R9X8K1 UniRef90-E6QN78 Uniinefoo-l4WWT1 UniRef90 ${ }^{-}$W4Y676 UniRef90-DOMQD9 UniRef90-GOVC99 UniRef90 UPIO0041A2531 UniRef90-J4HVD1 UniRef90-UPIOOOO12188B UniRef90-UPIO003B66370 UniRef90 G3VB99 UniRef90-G2LEQ2 UniRef90-F8PPG9 UniRef90-E6ZJD8 UniRef90 G8BSG1 UniRef90-UPIOOO287D2F1 UniRef90-UPIOOO2B411C5 UniRef90-S7VQG1 UniRef90-Q7NKV9 UniRef90-M4W4F7 UniRef90-W5KL74 UniRef90 C5M225 UniRef90-UPIo004408DAB UniRef90_14WD69 UniRef90 J7RBK9 UniRef90-V2YKJ5 UniRef90-I2GVP6 UniRef90 M7Y3G1 UniRef90_W5US45 UniRef90-A7ENC0 UniRef90-M2N1G4 UniRef90 J8LHUO UniRef90-M31M09 UniRef90-C4YBK3 UniRef90-UPIO00462204D UniRef90-UPIO00462204D UniRef90_W6MW95 UniRef90-GoWHP9 UniRef90-A3M0M1 UniRef90-A8XQT1 UniRef90- H3D7ZO UniRef90-E6RO12 UniRef90-WOTA78 UniRef90_UPIO00440D37D UniRef90 C3YEJO UniRef90_U7PWW3 Unii effol-G2WT92 UniRef90- ЕЗМ253 UniRef90-A0A024NF59 UniRef90-A7SFK9 UniRef90-O43023 UniRef90-11NAY2 UniRef90-H2AQF7 UniRef90 A5DZ31 UniRef90 UPI00044079AB UniRef90-A3HSM7 UniRef90-A4CKT8 UniRef90-S9PVN2 UniRef90-C3Y1R9 UniRef90-UP100035C1B1B UniRef90 H8XBF5 UniRef90_-Q6J516 UniRef90-G8BR56 UniRef90-T1KPU3 UniRef90_C4YOP8 UniRef90-M8E830 UniRef90-L8GC39 UniRef90-UPIOOO3628579 UniRef90-UPIO004417A17 UniRef90-UPIO004410556 UniRef90- I2GKD6 UniRef90-UPIO002627877 UniRef90-Q6BMF3 UniRef90-M7WNZ1 UniRef90 G8BVQ5 UniRef90 UPIO0041F076B

YDFTELSRELRRGEAFDEDADAREG $\square A E V V P L V \square H$ PFKMDGY LREFENKLRDMATKY TDKLNFNAFG PFDVPRYAQDLKGHFANALKNVQTMAPDFTE E FDQAS PLNTTQYALELDTYLDEVENVASSLSLAVSP $\qquad$ DFSGRR PVNTTNLASVMKSYLPQLKTSILGMNVDLDSULEQYALLS
 LNLLDYAREIERLAREL AQEHPQ LDATALL

DDVGRYTRETSKAVVPVYKRVSQLSQSGQLKEVNPTWLG PFDLRTYQNELKNHLSKAESLYGK PQRFSDFATTVATYMTETKKLAEDRRAQDRNREIELAVLE PFSYISYANQLQAYKDTLNHLLDGSVSLDSLLSSSIEELKF PYDLPRYATDLTMHFKTSTDK甘KAYYPAFTG

FQKS
QTDFAALD
DDVTSYSRLIRKHVASTNGQVIQLTHAGNDNSLKSQWLI PFNFHDFSRRLEDYERDLERYAQSQUDKLDQPNLNFDGLK
PMRFGDFSDTLDRYVGELHTLVDDTRKATEQQHTDGAPGD FD $\square$ ADY $\square \mathrm{S} \rrbracket \mathrm{V}$ EGANKLKEEV

GDRLNTKPFF
FELNTYAKELNKYFTDLMKRVPKDKSYDEELENDGNRDD PYEAGRYAKDLKEHFAQAEKNVKSYESGFKGFEKSTQ LDVDEYTRDIRKNVRGMGKQIKQVAADNSNASFADKWDS PFDFRAYSASLSSWVINLLEDWAASLAS
PFDLRVYANALQQWAETLEQDVVELYAAQTGLGFTLQPRK FDUTNYVKDVDERFQKLEQAYPG KLDTSVI
$D L L K D A S H D L G H F K$
PYGLTTDYVEVVDELLHSLEKDHSK K KNFDKMD PINTTHHAVELGKYLDKVESDATA P I NTTHHAVELGKYLDKVESUATA $\qquad$ TSLDVDFSDLR PFNVEQY $\square N \square L G G E V N K \square S E K N T T F$

T SLLDVV D D F S D L R
K N KQLS LEDLLLKTLEDLQNSTVSFDLKT

 FKTHEYMVE $\square$ SKYFDT $\square R K N \square A D L L E L L T T H S \square D F D A M V$ $P \square D V S E Y A T T V R E M F H W \square K D \quad E Y G D Q F E T A Q \square S \square D A L E$



PYDVPRYAQDLEGHFENALKKVQT DAPDFEKFEKSLEMLE PYALTQYATDLKGHFARAVEKIKAYDGDFKG PYDYVEYARTLRRYVGPIVRSLATRGGTPGGAQPSLAPVS

 AADQRKEDQTPALDMAALD PLNFSNYAGQLQTYLTTTQQQVATGD
 $P F N L F H Y V Q F L Q N V Q L K I Y Y Q A Q$ QFVNEFTEAVK $\square$ T



PFDYNPYASLLQETVKHVQA DAPEQLAQP


## QP

PYDLARYPTDLATHLKAAEKADKAYSP TYSDEPLL PFRYSKYADLVIQLLIRDFNEKYKAFGVDLSEVIDQAQAWK PYNFANMASKLVSYSDDLENYANAKINQYEKQVVHFTTLR

MDISDHVIKIDSYLKDL VKNYSREDNVNKVTEGLLL

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UniRef90_Q6BMF3
UniRef90_M7WNZ1
UniRef90_G8BVQ5
UniRef90_UPI00041F076B


 K S I VNLLQSKSKALDEEKSKTEKRFKVQAVNAKLVAFERGF


 E S V R K M Q A A S $\square$ A L D VE R T E A E H QL Q i Q E V N H K L EGLD I IWRRLGEDWNAWRSTWNR IVMRWTQNKKLSNISSRQ ALAAAARFTQAATD DRSQQLHPPANPAALNLALRSVETAF

 NATTAFEAAADSVSHEMDQEHDFSRVRLI NNRQLRAARAAF
 A ALA QLEASSKAYQTALDAAMSEKQLAK DNQELDGLEEKSW S S IT N L Q A A S DA LD GEVVHA DH H H L K L A R P ID K L HR FERGF



RACSSFQRAASG I DRDDT DLDN KEACRMLNDRMMTVEHS L

 S A $\square$ A A L E K S T S A L S K T L P K A L N E N R L K K L N A DL I QL E K S F T A L D S S L A A R P L P P A A Q K E A G A A L I A TAE R T M

 RA $\square$ NS L LK S A S DKY QE WARDWK QFMFRWKWNDNMIEFNGQF
Q A AK R LR QSAQAY QRHAA GPDLPAA RQQQLNQL DRME QNL F G $\square$ S T WK R $\square \mathrm{G} \square \mathrm{G}$ WD N WVK A WS HS V H R WT WNRKL SNVGGRRQ
Y R SKK F D K Y C D S L E K S WE N S ND K L R K i R R V N N P L L KM F E R R N F


D A L S D MS QKAS $\square F H$ QFEDVWT GQFQR LEYNDRVAHF DTML K GL LIF WK K $\square$ GNEWAS WT Q GWENS $\square R R W T W N K K L T N \square G R R T$



 E D L NNWRR L GUVWRDWRGAWNKAPSRWLWNRKIICDIGRQQ


 HALRKF DKAAKEVQK SAVANFTLAAAAFEESLSS $\square G N P \square V A R M Y N D Q L Q Q M E R A F$
 I RKFI QAAKR DQK INKKLSSFERGF

 KSAQAFDEKSLHLQQDQADNYLNHLKKIRKHNRSLKKYERNF ASSSMEYQK ALDA A MDS GNVS DK DL E K I N E EL I G L E K S W QVVP E LIE Q S A LIE L S R E I E A L L S K A RA QR I N R E L I A L E K S F
 QTSKNFMAA DSEWHS LMLHTK K HPEL E GFNAKLARFENSF





 QA GHKF QTQAN EVMKY I QDSRDVLGL R IVVNDKLMRA ERGF T A S S K F R E A A E A L D D E R V K A IE EF DKAAKR
A AVAELKKNAENARQTYLKSGRTDKLAELNKGLRQQLERGF



| UniRef90_H2VM97UniRef90-H2T118 |  |
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|  | LNPEGMPYGDWYKSLYASSDPFSGYASWILPGLQYQT A |
| UniRef90-UP100037FF91E |  |
|  |  |
| UniRef90-M2RR85 | 1 SEDGI KDREWYRHLAVAPGKWLGYGATTLPSIT |
| UniRef90 G3AVQ1 LHSKGLHERPWFKHIIFASGRYTGYAGQNLPGL |  |
| UniRef90'ATTME2 TYAAGIYNRPFYKNIILGP |  |
| UniRef90-U1Y | KGLP SREWF |
| UniRef90-UPIO00455E752 TS K D GLK K R E W | DGLKDREW |
|  |  |
| UniRef90-E6QN78 LS |  |
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| UniRe90-3xah |  |
| UniRef90-W4Y676 | HLI |
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| VB99 |  |
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| $90^{-G 88 S G 1}$ |  |
|  |  |  |
|  | KNLVYAP |
| UniRef90-UP10002B411C5 L DVD GLR GHPWFKHLVYGP |  |
| UniRef90-Q7NKV9 L R VEGLPRRPWFRH |  |
| UniRef90-M4W4F7 | LPGRPWYRNLIYAPGLATGYEV |
| iRef90-W5KL74 SPYVSPREVPFRHIFFGTGN |  |
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| UniRef90 UPIo004408DAB S EGGIKDREWYKHLGVAPGKWLGYGATYFPALTEALTDE |  |
| UniRef90 I4WD69 |  |
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|  |  |
| PRDVPFRHIIFGLGDYS |  |
| UniRef90-M2N1G4 $\quad$ DHGGVPGRCQYKHIVFGPRRWARHSFGSFPFIRDAVEDG |  |
| UniRef90-J8L |  |
| UniRet90-M31M09 ${ }^{\text {U }}$ ORKGLDNRFWF | DNRFWFRHIVYASGR |
| UniRef90-C4YBK3 |  |
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| UniRef90 UPIO00462204D |  |
|  |  |  |
| UniRef90-W6MW95 LHM |  |
| UniRef90-A3MOM1 |  |
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| UniRefofoUPlo00440D37D HP |  |
| UniRet90_C3YEJO |  |
| UniRe90 G2WT92 ${ }^{\text {a }}$ ( HPEGLDGRDWFKHVVFAPGLWTGYAGAVVPGLLC |  |
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| UniRef90-AOAO24NF59 |  |
|  |  |
| UniRef90-O43023UniRef90 $11 N A Y 2$ |  |
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| UniRef90-UPIO0044079AB <br> UniRef90 A3HSM7 <br> S |  |
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| $\begin{array}{ll}\text { UniRef90-W0RDP3 } \\ \text { UniRef90 S9PVN2 } & \text { TRPE GLLRTRPW } \\ \text { LDESGLPNHEW }\end{array}$ |  |
| UniRef90-C3Y1R9 ${ }^{\text {U }}$ L T PGGVLGKPLTYKHLLLSPSKNDQY |  |
| UniRef90-UP100035C1B1B LDPTGLPFRPWYRNLIY ${ }^{\text {a }}$ |  |
| UniRef90-H8XBF5 ${ }^{\text {a }}$ HSKGLHKRPWFKHIVFASGRF |  |
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|  |  |
| UniRef90-C4YOP8UniRef90-M8E830 |  |
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| UniRef90-L8GC39 |  |
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| niRef90_UPI0002627877 |  |
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UniRef90-B9WJP3 UniRef90 ATTME2
UniRef90 U1YAM8 UniRef90_UPI000455E752 UniRef90 UPI0003F105C7 UniRef90 R9X8K1 UniRef90-E6QN78 UniRef90-14WWT1 UniRef90 ${ }^{-}$W4Y676 UniRef90-D0MQD9 UniRef90_G0VC99 UniRef90 UPI00041A2531 UniRef90-J4HVD1 UniRef90-UPI000012188B UniRef90 UPI0003B66370 UniRef90 G3VB99 UniRef90_G2LEQ2 UniRef90_F8PPG9 UniRef90_E6ZJD8 UniRef90-G8BSG1 UniRef90_UPI000287D2F1 UniRef90_UPI0002B411C5 UniRef90-S7VQG1 UniRef90_Q7NKV9 UniRef90-M4W4F7 UniRef90_W5KL74 UniRef90 C5M225 UniRef90_UPI0004408DAB UniRef90-I4WD69 UniRef90 J7RBK9 UniRef90-V2YKJ5 UniRef90-I2GVP6 UniRef90 M7Y3G1 UniRef90-W5US45 UniRef90-A7ENCO UniRef90-M2N1G4 UniRef90 J8LHUO UniRef90-M3IM09
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UniRef90 G8BR56 UniRef90-T1KPU3 UniRef90 C4Y0P8 UniRef90_M8E830 UniRef90_L8GC39 UniRef90-H3F5M3 UniRef90_UPI0004417A17 UniRef90 UPI0004410556 UniRef90 I2GKD6 UniRef90-UPI0002627877 UniRef90_Q6BMF3 UniRef90_M7WNZ1 UniRef90 G8BVQ5
 AS $\square$ AESTDMEDLRVQLALAT WNLQGCANAM MKDKDS LLKA WDM



 K $\square R$ QKNNSAFNQFKNQLALATWTIQGAANALA
 SRRWDEANRYAADTAKVLDRYRAQLDRLT

A D D P D QEHRWRVVEQQVA ILTHAVEAATSVLKDVT NAMT VRRELVRLCDTIEAATDIL ED WQRAQDQI DLAAKVFANSAD
ITNRTEKDEEWDRYAKAUI SSLAKKIDQDTK QL NNSTLAEDEAKRVSILLDKLAKDI
E $\square$ SPSTSNNLREVINQUSVVQYSVDCVINTLKDA
QLLRDSRSHFEEFRRQLALLTWTVQGAANALS
NDAADVARAMEQVVALKKATRTLQG
RNTTTAVHEANRLKVVIDNDAETIRA
AS $\square T K T T D M G Q L H T Q V A L A T W T L Q G C A N A M$
A DENA WNE AQDQL DVIT GALL
RFDDANVYAARTAK VLADYAARLDGARGTDE
KE DNKRELEELLIQHEIWW
KK DQLNHWDAV
ERQWSEAHEQSATLAATLERVAGQПDKAT RRWEDLSRY VVQTAVLDRYREAI D
KN PKKEDDDLLRNQFALTTWTI QGCANDLA
QNDFSSAQDEIDQLARTLESAS
Q NAS $\square$ A
 QDWATAQEQLNIAAKVLKQSAE
KNATDAQHEVERLRAVVDGLAEIVK
DS TDFIYWLRKLHHALRRGNVSLE
SKSTARLTEWDE
TQQAVGSDA DLLFRNQFALIT WTDQS CANDDA
WALAKDLVEKTARLIKKASSKMAD
RWTDAQS AVERAATVLNEAG
NDWKRAQEQVNVIGNILQSAALFVEE
SFDRFVKWVNVLSRSVKRTSSQLN
A WT RAVKKWGGIIARA
DDFDRAVKWLY I I S QT

GNWTNAVRWAD VVEERLAAAAKGLH
D
T\DKDVALLAEHEVSR\VNVVEGLATSLQS ETSGDEQKLMRQLAKEISLVHLAFICAKHSLND


AKDWDQVREQVTVVAWCVMSAAKVLAS D VEAAQKEVKRII ALLALLDRAHN

S G $\square$ S ERERLS S $\square$ QHEI W
GNNWKAAQEQLDDVSNDFSESAED
DNATDAQEEAGRLLQALI GAGLAKDLK

EKSTNRLEEWD TRYADAI RSLTNKMRALA
GDRTLLEREDADLAGRTDAATAALGRAVEALR

D N F DRFVDWL Q $\quad$ RAESTVSRVANDL
 EDPESALKWL NVYWRSLYVATGLLS
NDPAALQKAAEKLKEVLAKAAETARS
AEHSDKESLLETLSESIIARLTLAMQTAAELL
KSTKNLPDLETRYRKAI TVLSEKLAASLTEAMNRPA

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UniRef90 GOP3B9 UniRet90 A7RHM6 UniRef90 ${ }^{-}$K5VR74 UniRef90-U5BUQ6 UniRef90-G3ASJ2 UniRef90 G8NS18 UniRef90_L8WS67
UniRef90 COBHM9 UniRef90-UP10003C26493 UniRef90- K K884 UniRef90- S3CE32 UniRef90-S8DVZ8 UniRef90 W4YVX0 UniRef90- S8FBQ5 UniRef90-M2R964 UniRef90 M4G5N9 UniRef90 A0A044TORO UniRef90-B7PI32 UniRef90-W4Z765 UniRef90 G4N4D5 UniRef90-R7ZW16 UniRef90-G31666 UniRef90-G3B7A3 UniRef90 G3NP86 UniRef90-A3LSU5 UniRef90-A0A024JML8 UniRef90 F6RFV UniRef90 ${ }^{-K O K N Y}$ UniRef90-R7T316 UniRef90-UPIO004446EC UniRef90 G8YD28 UniRef90-Q6FMD3 UniRef90_Q756U5 UniRef90-12K1E5 UniRef90 U6NHI1 UniRef90-UPIO004416511 UniRef90-UPIOOO4416511 UniRef90 I3Z7E2 UniRef90-H9GSW1 UniRef90-A0A016WNC1 UniRef90 V3YXX8 UniRef90-M8AWH3 UniRef90-A0A024GDS7 UniRef90-UPIO003F4A42F UniRef90 X8JUW1 UniRef90-B6K1K6 UniRef90-HOH1X0 UniRef90-J7R8X3 UniRef90 D8PS66 UniRef90-G3B938 UniRef90_A0A024JAP5 UniRef90 Gom6T1 UniRef90-E7F131 UniRef90-T1ISE6 UniRef90 Q8JZS3 UniRef90 H5XMR9 UniRef90-V8NEN0 UniRef90-S8C3H3 UniRef90 K1QWW6 UniRef90 ${ }^{\text {C6THX6 }}$ UniRef90-A0A017SI15 UniRef90_S70IL8 UniRef90 A7TFXO UniRef90-U5H5K4 UniRef90-K5XXG3 UniRef90-15C9A2 UniRef90-FoWWJ2 UniRef90-W3X8U6 UniRef90 G9P9N8 UniRef90-A7F2F3 UniRef90-C5DF33 UniRef9o_KiwL93 UniRef90_W9C0V0 UniRef90-F8NPB5 UniRet90_G2XU89 UniRet90 A7TEM1 UniRet90-W1 QC93 UniRef90-S2JV20 UniRef90 W4SHI1 UniRef90 G9MIA2 UniRef90-Q93332 UniRef90-12H2N2 UniRef90 XOTYQ2 UniRef90_O27HW8
 PYD $\square E R Y A T D L E L H F E N A T Q Q V N S F Y S D F T G F T A S S Q A \square S$
P LDDFGRYGDVVLRH $\quad$ GS $L$ NEFSGD $\square K V Q P Q A R G L T \square Q W V Y$ FKTSNYMATIWHHYQDLYGLVNTFPENTKDASLSSDQLF


|  <br> PYNFIDLGTMLDAYDDDLSKFSKDGIDKLDQPNDHFDFLL <br> PYDYKLYGSEI GSYLTEARTRATE <br> P LDDTTQYA LEELDDYLDK $\square V K L L P S \square P N E L$ <br> YNLNKYPADLKMHFDAATAKIKKYDKQFEG FOKVTV <br> P LD Y S CYGDVLLQHDAPL <br> GRHEAQLQVRGLTLGWLY |  |  |
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P $\square$ NTAQYAFE $\square G V Y \square H E V E K \square A A S S D V D F S G \square R A S \square D S L Q$
PFDMEAFANSTT S WADEFVA WAESKGRATPRRARADDPMR
 PYDLDEMAEFV AEGFQYFTQRHKDS DESHRLNLDGLKK

P L D T DAFADSLSAWADEFVEWTENKGAHQEGHPFEDMK LDR PYRPSRYAEDLTVHFEAAERQ $\quad$ SSSFS $\square D F K G F S K S A E$
PDDFGRYGDVVLRHDGNFNEFSG DVKRGLTAQWVY
PFKFGEFVDRLNEYQGDLEKYADRTDGKANEPVMHFEKLT
 P F D M G T Y A E S L D A Y T D DLLARYCATMES WT G N G D V V N F D A L M
 LDVS RYYGSTTKAVVQVYKRVNQLTQSGQLKDVSPNWLN $P$ YGFT DMADS L GVYMKDLSTYAKKAKEKGQT $\square N L K Y D Q L S$


 $P L N T T H$ Y ALLE L $P$ YQ TS S Y A RDLEGHFSNAVAQVKKFNPRFDGFSKS P LDD Y WC Y G DVL L Q H DGRFNE Y S P Q L K S R G LTT L W WM Y
 PFDYMSYTTELEA YTKVVEK


PF S LIA DEVD GYASF I N R LS A T P A S Q N $\square$ D F S S $\square S E E L Q Q A L K$ PFSI S S Y V DF LS NTLQDLQRECS D



LG D L LD S T ITTDLE K V K $P L D L G A Y A D A L D E F A D D L D Q Y A A M Q E G W D K P Q N V S F A L I R$




H D K E $\square$ Y T $\square$ L T K T S E L LE T E S $\square S \square D$ D Y T


UniRef90＿Q6CWF4 UniRef90－K4IDZ3 UniRef90－W4KEJ3 UniRef90＿L5K848 UniRef90＿G8JMM8 UniRef90＿K5XBD3
UniRef90－G0P3B9 UniRef90－A7RHM6 UniRef90＿K5VR74 UniRef90－U5BUQ6 UniRef90－G3ASJ2 UniRef90－G8NS18 UniRef90＿L8WS67 UniRef90＿C0BHM9 UniRef90－UPI0003C26493 UniRef90－K5X8Z4 UniRef90－S3CE32 UniRef90－S8DVZ8 UniRef90－W4YVX0 UniRef90－S8FBQ5 UniRef90－M2R964 UniRef90－M4G5N9 UniRef90 A0A044T0R0 UniRef90－B7PI32 UniRef90－W4Z765 UniRef90－G4N4D5 UniRef90－R7ZW16 UniRef90－G31666 UniRef90－G3B7A3 UniRef90－G3NP86 UniRef90－A3LSU5 UniRef90＿A0A024JML8 UniRef90－F6RFV1 UniRef90－K0KNY1 UniRef90－R7T316 UniRef90＿UPI0004446EC1 UniRef90＿G8YD28 UniRef90－Q6FMD3 UniRef90＿Q756U5 UniRef90＿I2K1E5 UniRef90－U6NHI1 UniRef90＿UPI0004416511 UniRef90－UPI0004416511 UniRef90－13Z7E2 UniRef90－H9GSW1 UniRef90－A0A016WNC1 UniRef90＿V3YXX8 UniRef90－M8AWH3 UniRef90－A0A024GDS7 UniRef90＿UPI0003F4A42F UniRef90＿X8JUW1 UniRef90＿B6K1K6 UniRef90－HOH1 $\times 0$ UniRef90－J7R8X3 UniRef90＿D8PS66
UniRef90 G3B938 UniRef90－A0A024JAP5 UniRef90＿G0M6T1 UniRef90－E7F131 UniRef90－T1ISE6 UniRef90＿Q8JZS3 UniRef90＿－＿LXMR9
UniRef90＿V8NEN0 UniRef90－ S 8 C 3 H 3 UniRef90－K1QWW6 UniRef90－C6THX6 UniRef90＿A0A017SI15 UniRef90－S7QIL8 UniRef90 A7TFX0 UniRef90－U5H5K4 UniRef90＿K5XXG3 UniRef90－D2QFA5 UniRef90＿15C9A2 UniRef90－FOWWJ2 UniRef90－W3X8U6 UniRef90－G9P9N8 UniRef90＿A7F2F3 UniRef90－C5DF33 UniRef90－K1WL93 UniRef90－W9C0V0 UniRef90－F8NPB5 UniRef90－A7TEM1 UniRef90－W1QC93 UniRef90－S2JV20 UniRef90－W4SHI1 UniRef90＿G9MIA2 UniRef90－Q93332 UniRef90－I2H2N2 UniRef90－XOTYQ2 UniRef90－Q27HW8 UniRef90＿J5JIII

DFVVRE QTQQ ${ }^{50}$ O P WWE WNK K ${ }^{60} V \bar{L} V T R L \square S T N^{70} S K|L R K| L \mid D R Y{ }^{80}$ SLKLST TSVAKALEKLLSEKISKRQKNQLNAQLLALEKSF SARGDY DRAAEKDRKE $\square Y S S E D E R L T R M Y N D R I M Q V E F Y F$ HSSYQFDENANDLRKDYPWWKFYKK】A GPVKRFDEAARRLG $K S T Q D L L A M S \emptyset K F Q E T M Q N P Y D S K H V N A V N E R L D S T E K C F$
$K A G V K K N A S K S F K A Q L T G K E D P \square Y L R M V N D Q M L Q A E K A F$ SHLHKRLERAD KRVRKANQKLAMFERGF
 RAAHLVKDNARRYHDVSNQWQAFDRRRKWNDNMLDFNAKF TAAKRFAAAGERAYRLQSAPTQGVDAAPLNAALRNAESAL KADKEVQAASKNLDQEAFSWLDRLDVSSINKKLANFERGF
 KAASKFKHAAHHWWKWFSKDRLFYRVRKANQKLVAFERGF
 DA $\square$ QRFSKAAQDFQHDYYELEDQTLLREVNDRVMSVERAF SATKEFKEALAGLHSH DPGWLRK』LRNDRNAKLQKFEQGF DAANAVAAGARKFAQWEMAWENTRQRTEYNSRLAMLDTNL EALTRFQVVANVVQEDTQSS $\square$ SMKQAEMDNNRMQFI ERAF QACNMLSSNARVFQEWANSKNNPMVVR\｜AND\｜MMQVERMF
 SARGDYDRAAEKDDERLMRMYNVRDMRVRSRRLRQVEFYF
 DS $\square E L D R N A A N S L Q S W G D S W K Q Y M N R W K R N E N M V A F N Q K F$ SAAQAMKELFRRFILWRTDWVNGEPIRFMEHRWNWNVRMM S LLGEFY GLAAKEFDKTEVELQKQUNIKLLGNRAKQIDRTF RARGSYKRAADA TSADTD DT DNESCRDLNDRIMKVEHSL SSTNKLKSVGQTFSDWCEGWERFMNRWRWNDNMLEFNSRF K GLLMWKRL GKECTA WKHEWSNSVHRWAWNKKDTNDGRRD ASVRSKT VVDYPWWKLREKDRDYNNLTSSNRRMKLLDRDF AKNQAFDKAAELQQHQYDHWDDVVSIAARTNVLKYYERRF



 NSTREFQSSFNRTNS NEHQLHSRNEKLLRLTRAF NS I RALKKAATKVNSERKNWYDSMRI RGLNDRLMQAERAF SA】A QFETSAVNVVEEMRSMKDGKKVZEXIVTRLDMTEKAF
 L L A N NYTFFLEKWVKEEGHSMYLSTNRVYNQLLMSFERAF SGATLWRNTKSQFEK WKRE WTDLMNRWTWNYLLSGDGVAQ KLAQHFFKFVEAWKDDVSGGVEPFSVTSWNVKLSDGGRKLD

 AAKSSYSRAATK LNNDDKDLEDMEMCRIINNRUMKVEHNF LAVKTFDKACLEYHNNFQSVNEHEELHEYNDRAMELERALD DAARDWRAATRQLENAAVRAEGHG LDAVNDALDAQERAL QARGDFARATTALTQDVKDLTDRDA SRLLNDRLM
DS ID QLERAAVRI NERWLTKRRASRARDVNDRLMVAERAF SEEIDNFSKHARLLQTEEKKDKLNEEVLYEVINDKLIQLPRQF
 KKVHDEAVQELPDWQAYKKFGMYARLLRTNSKLMKFDKLG ERRVKSINTRRRTFEQGF QRVRAVNNRLRSFEAGF
NVVAELKKNADACEMARQNTGRTDKLVELNKELRLLERSF A ALEALTAKGQAWDSAVEKSLKPDQLKTINKQLLGLEKSF SA A A QFETSAVNVVEEMRSMKDLKKVREVNTMRLMTEKAF
 H S ERDKAAKLDEKAAWARDRYI ATVNKQYKFI ERHF HRATA LK HAA $\square R$ WWK WVSKVK LVYYKI RTVNEKYKYLERKF
 NRASALKNAA DRHDQD $\square$ PWWKLFNRIRTVNEKYKY LDDRKF
 GSSIKLDNKTSYLQDLWDNSVDMPWIKYTNDRLLLLERTF TSLIKLKS $\square$ AREQQAFIKTWTEAVNRWDWNAKLVLLEK LI SALGHSLAATSLHFDKRVTHWNKQLSVKKHNERILQFERAF
RS IS EFRKKAVSDDERAAWWWNVIGKARLNRQYKYIERQF KTVLELSEIVQRRNVSKLEELPFGSRVDINNRLIEFEKCF



| UniRef90_Q6CWF4 |  |
| :---: | :---: |
| UniRef90 K41DZ3 | LDPKGMPYGDWYKSLYASSDPFSGYASWILPGI |
| UniRef90-W4KEJ3 | HEDGITKDREWYRHLGVAPGKWLGYGATTLPALTES |
| UniRef90-L5K848 | LSQYVSPADSPFRHIFLGCGDHTLGALLDHVRLDRALEVA |
| UniRef90_G8JM | LTERGLKGRPWMKHSIFGPNKVLGYSG |
| UniRef90-K5XBD3 | ISEGGIKDREWYKHLGVAPGKWLGYGATTFPALT |
| UniRef90-GoP3B9 | I NPRGSTHNPSGRHVLFSVSDTDSYSNSMMAGVQNA |
| UniRet90-A7RHM6 | VRADTYSSDS ${ }^{\text {dTK K NVV SPRGY }}$ |
| UniRef90-K5VR | I SEEGDKDREWYRHLGVAPGKWDGYGATTLPALTESFT |
| UniRef90-U5BUQ6 |  |
| UniRef90 G3ASJ2 <br> UnRef9-G8NS18 |  |
| UniRef90-L8WS6 | SEAGLPGREWYRHLIVAPGKW |
| UniRef90-CовНм9 | I SEKGMYFGSWYKSLYASSDPFSGYAAWTLPGL EYE\A |
| UniRef90-UP10003 | SPYVAPTETPFRHVLYGRGPH |
| UniRef90-K5X8Z34 | SKDGMKDREWYKHLGVAPGKWLGYGATTLPALT |
| UniRef90_S3CE32 | LHPDGLJSDRWYRHLGVAPGLWWGYGATTLPALTEA |
| UniRef90-W4YVX0 | AGDPGNYYLPQLRHVVYGPSR SGYEGQGFGPLTRA |
|  | AEREWYRHLVVAPGKFLGYGATTLPAVT |
| Ret90_M2R9 | KDREWYRHLGVAPGKWLGYGATTLPALT |
| RRef90_M4G | NRTQFKHVVYGPKLWASH |
| UniRef90_AOAO | EQGIPERAEFRHLIFSNSUHNDYGNLLI GGVLDALASV |
| UniRef90 B7P132 | IT TPKGLPSRHTHRHLLYSSDS |
| UniRef90-G4N4D5 | QLWNSREPGY |
| UniRet90-R7ZW16 | QSLYASTDPFSGYASWVL |
| UniRef90_G31666 | LSQYVSPADSPFRHIFLGQGDH |
|  | DMQHPRPGYLNLLFAPPTDNGYQWNTFPAV |
| UniRet90-G3N | PYVSPVETPYRHLLLGRGPH |
| UniRef90-AOAO24JML8 | DK LLDSDSWYKHQVYGMQLWHPTDVPTFPSVR |
| UniRef90-F6RFV1 1 | QYVSATEFPYRHLLGRGEHT |
| UniRefo-R7T316 |  |
| UniRef90-UPIO004446EC1 | P ${ }^{\text {a }}$ |
| UniRef90-G8 | LTQDILMKRQGYVNLLFAPDSNDDHEWNSFPKVRDALD |
| UniRef90-Q6FMD3 | PNGLTDRNNYKNVIFGPTLFANNKNWSFPGVRDA |
| UniRef90-Q756U5 | LK SKHGLAGNRPWFKHVVFVSARYTGAMGQQLPGMA |
| UniRef90-U6NHI1 | VNPRGTPDDASARHVLFS |
| ef90-UPI |  |
| UniRef90-UPI0004416511 |  |
|  | LDTKGMYFGSWYRSLYASNDPFSGYASWПLPGDQYE |
| UniRet90-H9GSV |  |
| UniRef90-A0AO16WNC1 |  |
| UniRet90-M8AWH3 |  |
| A0A024G | E |
| UniRef90-UPI0003F4A42F | RQWYKHI VAPGLWKG |
| UniRef90 $\times 8$ | REWYRHLGVAPGKWLGYGATTLPALTEALTID |
| UniRef90 B6K1 | PVGLPGHEWYKHVIYGPNIRD QKPFVLPSVYEQL WIGG |
| UniRef90-H0H1 UniRef90 U7R8 |  |
| UniRef90-D8PS66 | REW |
| iRef90-G3B93 |  |
| UniRef90-A0AO2 | GA |
| UniRef90 Gom6T1 | NPQARHLLFHPSADWYNGD |
| Un | LSPYVSIRDFPFRHIEFGNGWQTATD |
|  | DSFYKVYYRHVLFGPHPDNKNGITLPEVV |
| UniRef90-H5XMR9 | GLPPGREWFKHMVYAPGLYTGYAVQPL |
| UniRet90-V8NEN0 | QA LLEHVTLL | UniRef90-V8NENO UniRet90 S 8 C 3 H 3 UniRef90 K1RTME UniRef90-A0A017SI15 UniRef90_S70IL8 UniRef90_A7TFXO UniRet90-U5H5K4 UniRef90-K5XXG3 UniRef90 15C9A2 UniRef90_FOWWJ2 UniRef90-W3X8U6 UniRet90_G9P9N8 UniRef90_A7F2F3

UniRef90_C5DF3 UniRef90-K1WL93 UniRef90-W9COVO UniRef90-F8NPB5 UniRef90-A7TEM1 UniRef90-W1QC93 UniR Refo-S2JV20 UniRet90_W4SHI1 UniRef90-G9MIA2 UniRef90_O93332
UniRef90 12 H 2 N 2 UniRef90-XOTYQ2 UniRef90 O27HW8
UniRef90
UniRef90_J5JII9
ADRDGLRARPWRKHLVV


UniRef90＿Q6CWF4 UniRef90 ${ }^{-}$K4IDZ3 UniRef90－W4KEJ3 UniRef90－L5K848 UniRet90 G8JMM8 UniRef90－K5XBD3
UniRef90 GOP3B9 UniRef90－A7RHM6 UniRef90 K5VR74 UniRef90－U5BUQ6 UniRef90＿G3ASJ2 UniRef90 G8NS18 UniRef90＿L8WS67
UniRef90 COBHM9 UniRef90 UPI0003C26493 UniRef90－K5X8Z4 UniRef90－S3CE32 UniRef90－S8DVZ8 UniRef90 W4YVX0 UniRef90－S8FBQ5 UniRef90－M2R964 UniRet90＿M4G5N9 UniRef90 A0A044TORO UniRef90－B7P132 UniRef90－W4Z765 UniRef90 G4N4D5 UniRef90－R7ZW16
UniRef90－G31666 UniRef90＿G3B7A3 UniRef90－G3NP86 UniRef90－A3LSU5 UniRef90－A0A024JML8 UniRef90 F6RFV1 UniRef90－K0KNY1 UniRef90－R7T316 UniRef90＿UPIO004446EC UniRef90 G8YD28 UniRef90－Q6FMD3 UniRef90＿Q756U5 UniRer90－12K1 UniRef90－U6NHI1 UniRef90－UPIOOO4416511 UniRef90－UPIOOO4416511 UniRef90 I3Z7E2 UniRef90－H9GSW1 UniRef90－A0A016WNC1 UniRef90＿V3YXX8 UniRef90 ${ }^{-}$M8AWH3 UniRef90－A0A024GDS7 UniRef90＿UPI0003F4A42F UniRef90 X8JUW UniRef90－B6K1K6 UniRef90－HOH1X0 UniRef90＿J7R8X3 UniRef90 D8PS66 UniRef90＿－G3B938 UniRef90－A0A024JAP！ UniRef90 G0M6T1 UniRef90－E7F131 UniRef9－T11SE6 Une90－H5XMR9 UniRef90－V8NENO UniRef90－ $\mathrm{S8C3H3}$ UniRef90－K1QWW6 UniRef90 ${ }^{\text {C6THX6 }}$ UniRef90－A0A017SI15 UniRef90＿S70IL8 UniRef90 A7TFXO UniRef90－U5H5K4 UniRef90－K5XXG3 UniRef90＿D2QFA5 UniRef90－15C9A2 UniRef90－FOWWJ2 UniRef90 W3X8U6 UniRef90＿G9P9N8 UniRef90－A7F2F3 UniRef90－C5DF33 UniRet90＿K1WL93 UniRef90＿W9COVO UniRef90－F8NPB5 UniRet90＿G2XU89 UniRef90 A7TEM1 UniRef90－W1QC93 UniRef90＿S2JV20 UniRef90 W4SHI1 UniRef90＿G9MIA2 UniRef90－Q93332 UniRef90－12H2N2 UniRef90 XOTYQ2 UniRef90＿O27HW8 UniRef90＿J5．jIII

TEATQDLKMWDQ RYAKATKELDDKLKD KNATLAKYEAGRLKEATDNTTGALKA SSGVAPGLGFQEFRRQLALLTWTLQGAANALS LS KDSDGVIEWLKILSTQI DYVTSLLT KDVKMAEFEVGRLTELLLNKLAERIVTPA NLLAKRTHNYEELKKQLSVVTAAINSAADFLKP HNAT

LLAEHEUDRLTKLVDKLADKLAS
LKSTDRDAEWDE
LQKKFGMVQEETDRVGQVLHEADN
DNARTQAQLDALAAALNRSAALEGAA
पK S S er
NNATLAKYEDKRLQKLVDKLADKDE AKEYDNAQKWVG乌IEGS WKAYGS $\square K$
NNATLAKYEADRLKVLIDQLSAEIR
KWTNS WDLVQPALSGTIARIEAAVHLLT
KNSTLAEDEAKRVSDLLDTHAQTI
KNATLAQYETGRLQGLIIDKLVKEIE
AGDWP LANQMMDKAVNIMKKAAGSL
TGNLNQANYWKRIKIGFAKLHYGIESAILILN
PFDSHLLHLQLALLTESVWQAAEML
DNNADPNK WEYVKMELAQVTYFIQSAAYMLQPVA
AEDWKTASERLETAVKIMRAA
पK DVASMDTWDSПYSQI DTLSDRTRAA
RSDGSKANQESRFRRQLALLTWTLQGAANADS
QKDWGRAQFEI DRLANIMELAA
ASTAETTDMEQLHTPLALATWNLQGCAN
DKNSTNNDWARVQRA：EKTASDISEAVSKD
LKNSTNNDDVGLLRKQLALLFTLTVKGAANALS

TQDMEKLRLHLALLTWNLQGCANAMA
AFNFDKAQEEI DKVASYI NLASD
QDYNKAQEELDGUGEILMNAAKDFSE
KDANSTDKWLKSLSTQVDRV


## पK S SERLQEWDERYANT■

LS NNETY品HNDAMATTKVQYAVETADDTL GNWNLKDQVA【LTDTFKRASSVLND
$S L I P$ LI RREVRDCQTVEQAADTLT
RSPLEAQTEADELTMMI RLMADHLS S KNATLATHEAKRLTYLLEKLAKSLD
NYTGGADQELDRSRAGRATE K D WS SVQAQLNTLGSTLQNTAH EHWALVQKQI DVVTK ILNEAEHS $\square$ TK EDEERAAYEAARLTQKLLELADDI NDFDRLVDGLGVVSKTLRR RDWNGAKEAVARAGAlLLDAASKLA ETSLNEQKYSKRLAKELADVNVAFICAKHSLSD RDK KASFDIDQVLNKFALLTWS QQGCANDLA
 $K L R Q K N D T A F N E F R N Q L A L A T W T I Q G V A N A L S$

RSNAS AFNEDLFKNQLALVTWT $\square$ QGAANA $\square$ S
NNGQ $\square S$ GDWS DMQ $\square Q Q S$ S $\square A$ VA $\square R$ QAS R NLQS $\square$ SAGVSERERLAS IRHEDW
D L DEAEVSESANQKSSVLTR $\square$
NNS TLAKYEAMRLKELIDDGTAKMKS
QENNRDELRNWLIL
EDLQGAVEEARRLKVVFGKLARRLR
QDEEAANHEMKRLITLMKKMAKSLQ
$\square \mathrm{L}$ S T A N L P D DLE
EWDTRYAAALDDLRQKDDAL
$S L I P R$ L R RELVRLCQTDEQAADTDT K D $\square$ A NAMK WV DI I N A C I K K A T K T I K
KNYSNG $\square K$ WAE $\square$ INHAVEKATRSI E
DAT AQDYENAEKWARASECLENAAEWDA
KDYENAEKWVGII EGILWKAHGSLK
Q N A T
 AEDYDNAEKW\D【IGKCLLDSAAEWLA S DF WELLVK
A GDWKEAQNQLELICELMDQC
D
RWEDLSATSCRPPRCWПGDARRS $\square$
K NYSNGLKWANIIKHSVDKATKSIQ
SNSTDSKELSRQLAKEIAGVNVAYDCAKHSLGE SGEPDWVLAQEQIDIISDALESAALFAEED
DEN
WT DHPEADADLFRNQFALATCTDQGCANSLA


UniRef90-UPI0003957349 UniRef90-S2JU03 UniRef90 GOPNK9 UniRef90-H0EGM8 UniRef90-S9X0P1 UniRef90-I8TLV5 UniRef90 B7QCP0 UniRef90_G8ZSR0 UniRef90- UPI0002B4685E UniRef90-H2AN83 UniRef90_G8BZ62 UniRef90-C5DFV0 UniRef90 G2Q0Z1 UniRef90-M8BXB0 UniRef90-F9WYT6 UniRef90-F1KV27 UniRef90-M1VHZ6 UniRef90-T2M379 UniRef90-C3ZCX2 UniRef90-A8NX37 UniRef90_A0A016TEN4 UniRef90-K7H339 UniRef90-G2R3A8 UniRef90-F8EBC4 UniRef90-17ZUZ8 UniRef90_R9XEC1 UniRef90-H8X7N5 UniRef90-HOYDS5 UniRef90_AOA024J6W5 UniRef90-Q59KR8 UniRef90_I2GZ93 UniRef90_G1N704 UniRef90_A5DDM1 UniRef90_W3WN28 UniRef90-L715B2 UniRef90-W3WKU6 UniRef90_A0A010QGY3 UniRef90 W6MWE9 UniRef90-E2L512 UniRef90-M3JYM8 UniRef90-J7RHT8 UniRef90_G8BIG2 UniRef90-G1XE44 UniRef90 G4U7Z7 UniRef90_G9NTR9 UniRef90-M0Y930 UniRef90 P47161 UniRef90-GOWH98 UniRef90-W5CRE9 UniRef90-S3DD63 UniRef90-J9EC64 UniRef90_Q58A98 UniRef90 UPI000455FC91 UniRef90 G0M8A1 UniRef90_UPI0003C16BE4 UniRef90-F9X3B0 UniRef90-C4QZ76 UniRef90-I1CLX3 UniRef90_GOVL03 UniRef90-G3JP59 UniRef90_C4XWE1 UniRef90_UPI0003F08EBE UniRef90- M4ANL3 UniRef90-B7P724 UniRef90-Q2HFZ6 UniRef90-R4XFY8 UniRef90-A0A024JG11 UniRef90_UPIO003AFD03B UniRef90-F1QRS5 UniRef90 UPI00045DCA77 UniRef90_J9E2L8 UniRef90-A7RHM4 UniRef90-UPI00046B3D5D UniRef90_Q6FUG9 UniRef90_l2JWY4 UniRef90_TOKIJ4 UniRef90-UPI0002B488B7 UniRef90-C5DS90 UniRef90-I1LT29 UniRef90-UPI0003C90901 UniRef90 UPIO0026530BE UniRef90-K1Q4M2 UniRef90-B8MVU9 UniRef90 W5N7W6 UniRef90-S6E7T1

 LD K F M P
FRAADYAQALDRYVKQVEDKLDEGSPSAESFGLSLKRLH PYDVSRYATDLATHLKTAEKAIKVYKSDYSVDKLLAQVET
 PFRAADYMADLWN I YEDLHQPLQKAFSDNEETAVSFDAFT


 LDFGRYGEELLAYQEKFLPYVK
PFNFLDNVARVEDYKKDMERYINEMDE F RAHDYA ITLKKHVGILQAK
 $P \square D V P N Y A T E M R A Y L S D L E E Y A E S E G A E$

FNVLEYARAIASYYESLEWTNKNSEYKRGHHTHRLHKLI
PYNFRDFG $\square$ NLVRLEEDLERYCESQ $\operatorname{CNKLDQPNLHFDGLK}$ NELQKLADSLSTTV ELLAKMDSVRFDSKN PYNFDDDSKSLQESMHYLKRFASSVFKDMNDKPVHYKNDE PFSLTD YANF L EKHLNQADDFFDKTAKATATSSLS LTRLG FSAESYATALIDGYVTQVEDKLNAAMLHPSKEEEVDISTLK
 DEVNSGAKRVLDLLKEDSIVAFDQQN DQLLTKSAKNVAELLDKDSUNFDKQN
P $\square$ D TAYYASEMRSYVDDLIKYSEEADPNFVH DFRGLD FRAHSYALSLQSHLLGLQK LSTPGFNTTRLS PFNGHDYGLVLFDFVDQLEH $\square G \square P N A \square G T K T Y R \square V M D N L R$
 PYDLLRAYAEKVREY DDRLTSFAQALESAGKSEGFDLTPLV PMSPQDYTNSMKQ ELSKLIVKPEDTCSSGNATFGYPK QDSVNFDRRD
 DYT YTNQLKDY LTKLLDN KCGDTLAEKNFTMDTVN $P \square R \square T S Y A Q T V L Q F S A H L N N G H S A E L Q S R G V S P Q W L F$
 FKLEEYATVLRRGLDDULEKASNHGKHHETPKELISRLQ
 $P$ FSVTRFAYSTKKAFQSLE KSSALLQNYGVTLDRLR
 FEAVEYSKVLAHHSKMLKT KYGSLLE GMLNRSALED
 Y D R QL L R L A K TVS DLLQSLETSESQL|

LDAGAMADTVMAHVDNDGAFLSSRMSSEETMSSDMTMLR
 PLDFPCYSETTLQQFSAQL SKYSGLHISSME UniRef90 S8AHZ0


UniRef90_UPI0003957349 UniRef90-S2JU03 UniRef90-B0CXY7 UniRef90_G0PNK9
UniRef90_HOEGM8 UniRef90-S9X0P1 UniRef90-I8TLV5 UniRef90-B7QCP0 UniRef90_G8ZSR0 UniRef90-J8PVJ3 UniRef90-UPIO002B4685E UniRef90-H2AN83 UniRef90-G8BZ62 UniRef90-C5DFV0 UniRef90-G2Q0Z1 UniRef90-M8BXB0 UniRef90-F9WYT6 UniRef90-F1KV27 UniRef90-M1VHZ6 UniRef90-T2M379 UniRef90-C3ZCX2 UniRef90-A8NX37 UniRef90-A0A016TEN4 UniRef90_K7H339 UniRef90-G2R3A8 UniRef90-F8EBC4 UniRef90-I7ZUZ8 UniRef90_R9XEC1 UniRef90-H8X7N5 UniRef90-HOYDS5 UniRef90_AOA024J6W5 UniRef90_Q59KR8 UniRef90-I2GZ93 UniRef90-G1N704 UniRef90-W3WN28 UniRef90-L715B2 UniRef90_W3WKU6 UniRef90_A0A010QGY3 UniRef90-W6MWE9 UniRef90-E2L512 UniRef90-M3JYM8 UniRef90_J7RHT8 UniRef90_G8BIG2 UniRef90-G1XE44 UniRef90-L8WZE2 UniRef90_G4UZ77
UniRef9O_G9NTR9 UniRef90-M0Y930 UniRef90-P47161 UniRef90-GOWH98
UniRef90- W5CRE9 UniRef90_Q6CGC7 UniRef90_S3DD63 UniRef90-J9EC64 UniRef90_UPI000455FC91 UniRef90-G0M8A1 UniRef90_UPIO003C16BE4 UniRef90-F9X3B0 UniRef90_C4QZ76 UniRef90_I1CLX3
UniRef90 GOVL03 UniRef90-H2AW27 UniRef90-G3JP59 UniRef90-C4XWE1 UniRef90_UPI0003F08EBE UniRef90-M4ANL3 UniRef90-B7P724 UniRef90-Q2HFZ6 UniRef90-R4XFY8 UniRef90-A0A024JG11 UniRef90_UPIO003AFD03B UniRef90-F1QRS5 UniRef90_UPI00045DCA77 UniRef90-J9E2L8 UniRef90-A7RHM4 UniRef90_UPI00046B3D5D UniRef90_Q6FUG9 UniRef90-_12JWY4 UniRef90-TOKIJ4 UniRef90_UPI0002B488B7 UniRef90-C5DS90 UniRef90-I1LT29 UniRef90_UPI0003C90901 UniRef90_UPIO0026530BE UniRef90-K1Q4M2 UniRef90-B8MVU9 UniRef90-W5N7W6 UniRef90_S6E7T1
UniRef90 S8AHZ0

50
60
70
 SARGGVVRAAASLRRDMSDSSNERLNRGFNARLMAAEASL
 E IV H KRNVT KLTE LL PGEARIDENNRLIDEFEKCF K A ASKFKHAAHHQDEDIP WWK WFSK I D L N TKYKY LERQB ATAKHFMSVISE WHS LMLHTKKHPELEGFNAK DAREENS F DA $\square$ A E LH QVAVQFDTNAADLQEDKT I QD DNRKYRTFEGQF

 NADNKFEASS I KLKMLLKDKHQSTNVDQ
R N MLLK WK K $\square S$ SD WK L WI R Y WS NA M N RWS WN $\square K M S N \square G K H T$
 KALLHKLDKHATK LDDRHADKWWKWPARRKVNTKYKYLERSF
$K S \square D A F L K T S \square A F D A H A A K \square S S Y R K V R A L N T K Y K L L E R Q F$ QALRNFAINPFDSRRI SLVNDRIMGVDRCF PAMD AF A G A A QRFS QRMLTVVA QCWA L R ELLNQALMNVVERAAL
 $F P \square R K F \square K A A K R \quad V R A N K K L I A F E R G F$
 $K A V G K L N K R A V G L D K R A D E L D R R F Q D R Q V N T K Y K R L E R S F$ $L K Q N A E$
$E$
$E$ ETVDDFARASAAFDAYS DSSLADQVQQVQSVNHKYTNFFERAF A GVRSKT IVDYPWWK LIREKLLRDYNNLTTANRNMKLLDRGF


 Q E I K E D C S R D F P L I Q F Y K K
A R D NS IIN ILLESAARAI HK WYEA WANYL QRWKWNENLIDRFNE YF KAVEKFANATAALDKDVQGSRSQTGVAEDNRRFRADEKS F EAANTFSSQRAKA WWQWPAKDK LGGWDIRKKLNNKDKVI ER Q

 $R A D N S L R Q V A D K Y H D F V R N W R Q F D M R W R W N D N M V A F N G Q F$
 QAV D S L K RVS LK YT GWHNDWK SAMENWA WNDNMVKFNEEF E QI A KL K K I A V QF DE WWQSLDHYWAKVKELNNK I QFFERK F R AVVE
A AVK A F R D S F K R L H DWH Q K $\square K \square G Y Q I R K V N T K Y K Y \square E R S F$ RAAKSFDSYAES L RVPRNTWWRFWAIVRGVNK DYTVFERQF $K S I K Q L E K A A T K I H M D K K V L Q A Q K K V R E I N D R L M M A E R A F$ G L L Y K E C R E A L P V WA F Y K K I K S Y I K L Q R S N S K S K Q D D Q
 A AVARVETFSQKFDDRAMEFPNNAAIRHSNNDLRKFESRL SALSNFSSATKS LDTLLAENHANSRTIAKMNKRYRELEKAF
 KTCQLLNEQVHMRNES LLSQSSARVRKVNAKLAKFEQGF
 A A A DAFVVEANVFSHFED $\quad$ VWTS Y LQQRREYNDALSTFES DLL S A S L I F HK Y M K DLLQE E $\square K K \square K \square A V Q \square K \square A N L K L V S L D N H M$


 NAVA RLENDTKNFNDDVTSYDETMK LDRMVNDLLTHLERS F SARGDYSRAAETLQRDYSDLHDLNTARLYNTRIMKVQTSW $M N D R M M L E R L D$ WWK WPVRLH LG WQVRK VNTKYK L M E R AF DLTMMQWKDETKAFNKQDESPVWALLKRSNWNYAVTTFHRNL VKLLNE FE EVGRRVDVYTAS LADEYRDHRVNLVLSKLERVVF

 NTSME F LQYAK R F D N Y IT N L Y D L K D F S W WN D R L M GV E R C F


 GAISSRLHAAALEVDARSNTKASVTNLQPD AK S E E L L R K A ERFQSY VD S L S E K D L
 AS HLLRESAELLFQSDEMRPANPDRVRMLNDDLQDVEKS F SAATGFMTAVQGLLE EVIGSVDSPITMTMVNSRLMYMERSF





UniRef90 U5GE61 UniRef90-UPIOOO3957349 UniRef90-S2JU03
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UniRef9O_AOAO24J6W UniRef90-Q59KR8 UniRef90_l2GZ93
UniRef90_G1N704 UniRef90-A5DDM1 UniRef90 W3WN28 UniRef90-L715B2 UniRef90_W3WKU6 UniRef90-A0A010QGY3 UniRef90-W6MWE9 UniReffo-E2L512 UniRef90-M3JYM8 UniRef90_G8BIG2 UniRef90-G1XE44 UniRef90-L8WZE2
UniRef90-G4UZZ7 UniRef90_G9NTR9 UniRef90-MOY930 UniRet90_P47161 UniRef90-GOWH98
UniRef90- W5CRE9 UniRef90-Q6CGC7 UniRet90_S3DD63 UniRef90-J9EC64
UniRef90 058 A98 UniRef90-O58A98
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UniRef90 GOVLO3 UniRef90-H2AW27 UniRef90-G3JP59
UniRef90 C4XWE1 UniRef90-UP10003F08EBE UniRef90 M4ANL3 UniRef90_B7P724
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UniRef90_S8AHZO

90
100
110
120
LDAEGLRARQWFKHLLVL
LSPFVSPLVTPFRHVL $\square$ GRGGH T TDPALVAELGTA
 I S E G G GI K D R E WY K H L L GVVA P G K WL L Y Q P GL D S R SWFKH




LYE K G L D GRP WF K HVVVFAP G L WT GY A G A V F P GLLV E S I D
$G L S G R P W Y K H M I Y G P S G Y N D Y G A E V Y P G A D D A C Q T A$
L
I
I N P R G L P R QP S QR HV L F S T S DRD SY T GRVVMAA V Y D Q ID A V I H S D GI P GR S WY RHTAVA P HP DK GYSAVAFP F L Y
 I S K D G DR D REWY R HL GVVA P GK WLGY GA T T LDPALTEATA EK

 L D P K GMA Y G S WY R S L YA S S D P Y S G Y A S WMLP A
 L R R D A QPKRSGYVNALFAPETGNDFQWNSFPQURSELMD L NPRAFPEERYYSP
L DD K GLD S R S WY K HA L IA P N K E T GY GAS L WP GLLDAFE

 $L \operatorname{S} P$ Y L L S P K E V P
I QRQTKPKRAGYRNVLFGDSAQKDHSWNSFPQVRD







SHG
T
NR
$!T$ HR G L K D RE WMK Y S L L A P S K F E G S VGEVLP G L H E G L A D $\square$ IT QRGGLKDRSWFKHSSLAPDKF DGFKGDVLPGLHEAM
 L LE Q GLP GRPWYR H L A
I T E Q GIPERT E F R H L I F T S IID N D Y G NLLLFG GILE
I N P H GI L G D P Q S R H V L F R P S A D N WY R G N A I S QV H S L I S K M







L F E E GL D GRP WF K H AMLQ A A S T GHANEES QH T T E S I D D
L R S A GWT TWFAHPVYG GPSRGTDGT GWMFPHLEDA YWT G


 $\checkmark$ V
LS QYVSPA DSPFRHDFLGRGDHTLDA $\quad$ LLDHLRLL V WE GVP GRA A Y R NL F L G P E L WT DEK S WVLP GL K DLL H N G



 $A D P H \quad P Q S S S D R H L I D P R R V P Y Y F Q S S A F P A L Q E S I A A G$

I T K C GLQQDRPWMK HSLYY A P EK RQGHSAAVLP SLED AV

UniRef90 U5GE61 UniRef90＿UPI0003957349 UniRef90－S2JU03 UniRef90＿B0CXY7 UniRet90－G0PNK9 UniRef90－S9X0P1 UniRef90－18TLV5 UniRef90－B7QCP0 UniRef90＿G8ZSR0 UniRef90 UPIO002B4685E UniRef90－H2AN83 UniRef90－G8BZ62 UniRef90 C5DFV0 UniRef90－G2Q0Z1 UniRef90－M8BXB0 UniRef90－F9WYT6 UniRef90 F1KV27 UniRef90－M1VHZ6 UniRef90－T2M379 UniRef90－C3ZCX2 UniRef90－A8NX37 UniRef90＿A0A016TEN4 UniRef90＿K7H339 UniRef90＿G2R3A8 UniRef90－F8EBC4 UniRef90－I7ZUZ8 UniRef90－R9XEC1 UniRef90－H8X7N5 UniRef90－HOYDS5 UniRef90＿A0A024J6W5 UniRef90－Q59KR8
UniRef90－I2GZ93 UniRef90＿G1N704 UniRef90＿A5DDM1 UniRef90 W3WN28 UniRef90＿L715B2 UniRef90＿W3WKU6 UniRef90＿A0A010QGY3 UniRef90 ${ }^{-}$W6MWE9 UniRef90－E2L512 UniRef90－M3JYM8 UniRef90＿J7RHT8 UniRef90＿G8BIG2
UniRef90－G1XE44 UniRef90 L8WZE2 UniRef90－G4U7Z7 UniRef90－G9NTR9 UniRef90＿M0Y930 UniRef90 P47161 UniRef90－G0WH98 UniRef90－W5CRE9 UniRef90＿Q6CGC7 UniRef90 S3DD63 UniRef90－J9EC64 UniRef90＿Q58A98 UniRef90 UPI000455FC91 UniRef90 G0M8A1 UniRef90＿UPI0003C16BE4 UniRef90＿F9X3B0 UniRef90 C4QZ76 UniRef90－I1CLX3 UniRef90＿GOVL03 UniRef90＿H2AW27 UniRef90＿G3JP59 UniRef90－C4XWE1 UniRef90＿UPI0003F08EBE UniRef90 M4ANL3 UniRef90－B7P724
UniRef90 Q2HFZ6 UniRef90－R4XFY8 UniRef90－A0A024JG11 UniRef90＿UPIO003AFD03B UniRef90＿F1QRS5 UniRef90 UPI00045DCA77 UniRef90－J9E2L8 UniRef90－A7RHM4 UniRef90＿UPI00046B3D5D UniRef90＿Q6FUG9 UniRef90－I2JWY4 UniRef90＿TOKIJ4
UniRef90 UPI0002B488B7
UniRef90 C5DS90
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UniRef90-B8MVU9
UniRef90 W5N7W6
UniRef90_S6E7T1
UniRef90_S8AHZO

GTRGDS
DLKKVGETEKT
VQRRLALLAWTLRGAAAAMA LI AKNAQSMLSK ETSLNEQKYSKRLAKE！ALVNVAF $\square$ CAKHS LISD

NWCDAEKSNQ！VTDKDRSATELLRS ANTPEVKQAWDDTRRNV
DRDG KNWNVLQWLS LLTQ Q NVKSLLQ KNWNSVQAELDNLTILLDSARYFLQ KHSANYTKEWNVVKKEVSLVTLTIEACANW EDYVSAQEQDESI GKALDKASTTF DDEAN ENKDD I F H Y L T TL Q

ARNWKNAERWVGII ESRDENAARRL K KTNTSESWQSVQHEIHRIARVISQAALVLS NEKDKKAVEKWTGII DKAVEDATKLL E E ESKTHRERQLANVATE $\square S\|I Q Y A V Q C A S N T\| A E$
LKNRRSAY L L REFKVKYS $\quad$ YYTYHVMMAVHADK PADDEGWE EVKKEVAAIASTI QSAADVISDV LNATEVQYEDDRLVELLDNLAKRI H V D ATNAQALGNELANQUSIVHNSLLCAMSVLAD ENSQNENDHSKRLAKDIALVVNAFICAKHSLLDE QDWANAERWVD【IESR【RNAAHRL
$N W T L A A A Y R D K \square N Q N K A V A F L E$
QDANST I Q WLQTLSTQVDRIV
ENDGNKFMEWASV Y V SMLDHATEK $\square$ TT R L QHDFESAQNAINQLASVLESAA
GWS RDDAMEW

> NAYSQQYGEVQKEDDNLANA DAYAAE

DLDGAN


D
KNETLAQHEVERDKGVMDKLVETVK
QNDFSSAQDGDNQLAQVLESAA
ET D R DQVH QW
HNFSGAQDQDDR\AQMDAQAAE SRNWTNVERWSEIIQKCVIDATRSDE
KNATLVAREAERLTHLLEKLAKSLN
ARDWSNAERWVD I I EAC【KNAARK $\square$ KKNWKDSRKWRDV


ETSVDDEELLKQLSKEDAFVNVAFDCAKHS $\square$ NE RNASLI RLEEDRL $\mathrm{L} A \mathrm{~L}$ I DSMAQNL EKSKNDKKMDKLLAGEI GHlHVAFICAKHSLSP $A T S S Q V A R Q E S R F R R Q L A L L T M T L Q G A A N A L$
$E$ WE EAQRWVGRJVAVL GRAVGGLK
 DRDAVVQ WLKKLQSQFSNI RYLLQ D R E EVFEWLTIL
A GNWENAKK WRDVLDEK\GNAAGLLED
 EDSGPGASQLNPLLRHLDQLALVVGRATRFLRE EDWVNAERWVDII ESRLKNAAHRLL DK GRTQGMI ELLGQTIRDAAEALRP DRTK LVVKWLRI SADVVGAAVDKLSKV FQESRFRRQLALLTWTLQGAANALS
RDEPH RFDEARFRKQLALETWTLQGAANAL
RKSDSGAFQESRFRRQLALLTWTLQGAANAL

RSAPGQGFQESRFRRQLALLTWTLQGAANALS

DTKGAT
Q WDEANDHLKLIGKVLNDAA WDQAQAELNKVTGLMDEAAE QWIAKIVEADEKVSKF $\square$
SKNTTD DWDSVRKQITMLVWCFDTA
F LILS LGRRLSSTQYETWRVAKA TRRAAGA
KLLSSNET LREALSEVLSSI HSAEVYDR
TGSLS

$N L S A A E \square Y R V G R L Q E V V A L L A$

VERDRE LDAE WLATL
A KNWTNVVRWSEI I QKCVDEATSS円E



lupas_21
lupas_14 lupas_14
lupas_28 jnet
jonf conf
sol25 sol5 sol0 jhmm
jpssm


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[^0]:    lupas_21 lupas_14 lupas_28 jnet conf sol25 sol5 sol0 jhmm
    jpssm

